

# *Monitoring the Economic Crisis: Impact and Transition 1998 - 2000*

Changing environments, natural catastrophes and economic crises can have hazardous effects on the health and nutritional status of populations . . . HKI's Nutrition & Health Surveillance System has successfully been used in investigating the impact of such crises on health and nutrition and provides key information to program decision makers through the continuous collection of crisis-sensitive data at the household level.



**NUTRITION & HEALTH SURVEILLANCE  
SYSTEM (NSS) – INDONESIA**

*When referencing this publication, please use the following suggested reference:*

Helen Keller International/Indonesia, Nutrition and Health Surveillance System (NSS).  
Monitoring the Economic Crisis: Impact and Transition, 1998-2000. November 2000,  
Jakarta, Indonesia.

## *Table of contents*

<b>Foreword .....</b>	<b>i</b>
<b>Executive Summary .....</b>	<b>1</b>
<b>Indonesia Crisis Bulletins 1998-2000 .....</b>	<b>5</b>
<b>Acknowledgments .....</b>	<b>157</b>



Preventing and treating blindness, and rehabilitating those with incurable visual impairments, has always been the global mission of Helen Keller Worldwide (HKW). The growth and development of this organization has recently led to changes in our corporate structure, reflecting our increased technical capacity to combat not only avoidable blindness, but also health and nutritional problems that affect the populations we serve. Helen Keller International (HKI) is now the program division of HKW, with three regional offices around the world, including the Asia-Pacific Regional Office.

In the Asia-Pacific region, we have given particular emphasis to nutrition activities, starting in the 1970s with vitamin A deficiency (VAD) prevalence surveys that led to tremendous achievement in controlling the prevalence of severe VAD – a leading cause of blindness among children here. This groundbreaking research led to the discovery that vitamin A interventions reduce child mortality by approximately 23 percent.

In the late 1980s, HKI established the Nutrition Surveillance Project (NSP) in Bangladesh to provide information on the impact and recovery of severe flooding. Today, the NSP is nationally representative and has been the leading source of information on food and nutrition for more than 10 years.

Building on the NSP, the Nutrition and Health Surveillance System (NSS) was established in Indonesia in 1995 to evaluate a social marketing program in Central Java promoting increased consumption of vitamin A-rich foods. When Indonesia was hit by a severe economic crisis in 1997, the NSS was immediately re-established and expanded to monitor the impact of the crisis on nutrition and health.

As with all of HKI's activities, our host governments are important partners in the work we do. The NSS represents a collaborative effort between HKI and the Government of Indonesia (GOI) at central and provincial levels. Today, the NSS operates in seven rural provinces and poor areas of four major cities, covering over half the country's population, monitoring the nutritional situation and programs implemented to address the nutritional problems during the crisis recovery period.

While the NSP and the NSS are designed to meet country-specific situations, their many commonalities also permit important cross-country comparisons, which can provide valuable insight into international policies and programs. In addition, based on its experience with surveillance systems, HKI has also conducted national micronutrient surveys in the Asia-Pacific region (Bangladesh, Cambodia, Nepal and Viet Nam). The findings of these surveys have been used by the respective governments and international organizations. The NSS, in particular, has provided valuable information to the GOI, the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the United States Agency for International Development (USAID), and various other local and international development agencies to guide program policy and development.

Since the start of HKW's involvement in nutrition surveillance over a decade ago, USAID has particularly stood out as a key donor through its consistent support of the work. This support has been integral to the establishment and continuation of both the NSP and the NSS.

Martin W. Bloem, M.D., Ph.D.  
REGIONAL DIRECTOR, HKI ASIA-PACIFIC  
COUNTRY DIRECTOR, HKI INDONESIA



## Introduction

The 1997 economic crisis caused an increase in prices and a reduction in employment opportunities in much of Southeast Asia, including Indonesia. The resulting decrease in household purchasing power among large segments of the Indonesian population put the population at risk of a rise in malnutrition and poor health. The economic crisis, coupled with the consequences of El Niño and political uncertainties, was the impetus for Helen Keller International (HKI) and the Government of Indonesia/Ministry of Health (GOI/MOH) to restart the Nutrition and Health Surveillance System (NSS) in Central Java and to expand the surveillance system to other provinces to monitor the impact of these events on health and nutrition.

## Key findings

Since its inception, the NSS has contributed to a better understanding of the impact of the economic crisis. The key findings are summarized under four major themes below:

***Increase in prevalence of micronutrient deficiencies:*** The NSS highlighted an increase in the prevalence of micronutrient deficiencies, particularly anemia and night blindness, after the start of the crisis (see Ind Cris Bul Yr. 1, Issues 2 and 3, and Yr. 2, Issue 1). The observed increase in prevalence of micronutrient malnutrition was supported by the findings that the consumption of highly nutritious foods, such as eggs, meat and milk, decreased as a result of the economic crisis (see Ind Cris Bul Yr. 1, Issues 2 and 3). The prevalence of childhood anemia is extremely high and there will be public health and economic consequences if action is not taken to combat childhood anemia in Indonesia.

***Impact of the crisis was more serious among poor households in urban areas:*** Prior to the onset of the economic crisis there was little information on the health and nutritional status of the growing urban poor

---

“The HKI experience in Indonesia indicates that releasing the information regularly under the title ‘Indonesia Crisis Bulletin’ and in the form of press reports helps to get the attention of the users in the government agencies, aid agencies, and other non-governmental organizations.”

- recent review by the Asian Development Bank on Nutritional Surveillance Systems for Crisis Management in Asia
- 

population in Indonesia. HKI had the foresight to expand the NSS to poor areas in four major cities in the immediate aftermath of the economic crisis. Although the effects of the crisis were initially observed in both rural and urban poor areas, the effects on the urban poor were more severe. Comparison of patterns of stunting and anemia by level of urbanization in the four cities suggested that the impact of the economic crisis was most serious for the urban poor (see Ind Cris Bul Yr. 1, Issues 6,7 and 8; and Yr. 2, Issue 1). Supported by a better understanding of the limited coping mechanisms of the urban poor, these findings stimulated the GOI and donors to expand and intensify programs in these areas, such as the vitamin A capsule program and food assistance (see Ind Cris Bul Yr. 1, Issue 8).

***Which indicator is most responsive to the crisis:*** The NSS was designed to include multiple indicators of malnutrition, including micronutrient deficiencies and PEM of women and children. Identifying the best indicator to monitor a situation requires technical knowledge, as well as an understanding of how a particular event, the economic crisis in this instance, might impact on households and individuals. If

the NSS had only included the traditional indicators (such as underweight among children), the negative impact of the economic crisis on nutrition and health in Indonesia might have been missed (see Ind Cris Bul Yr. 2, Issues 3 and 4). Based in part on this experience, the United Nations Administrative Committee on Coordination, Sub-Committee on Nutrition (ACC/SCN) reports that “Indicators of diet diversity and micronutrient status should be considered leading or early indicators for monitoring the impact of crises on nutritional status.”<sup>1</sup>

**Evidence of slight recovery:** The routine data collection of the NSS provides the opportunity to monitor trends in malnutrition and the underlying causes over time. Analysis of the data from the urban poor areas in 1999-2000, the time period during which the crisis impact was more severe, shows that the prevalence of anemia and maternal malnutrition appears to be improving in these areas (see Ind Cris Bul Yr. 2, Issues 3 and 4). These findings, supported by other signs of economic improvement, suggest that there has been a slight recovery to the crisis.

### Achievements of the NSS

One of the main achievements of the NSS is the timely provision of information in the form of the ‘Indonesia Crisis Bulletin,’ which was designed to communicate key messages to policy makers and program managers. As stated in a recent review by the Asian Development Bank on Nutritional Surveillance Systems for Crisis Management in Asia: “The HKI experience in Indonesia indicates that releasing the information regularly under the title ‘Indonesia Crisis Bulletin’ and in the form of press reports helps to get the attention of the users in the government agencies, aid agencies, and other non-governmental organizations.”<sup>2</sup>

The latest Bulletins, collated in this report, provide information on health and nutrition in each of the NSS working areas (Ind Cris Bul

---

**“Indicators of diet diversity and micronutrient status should be considered leading or early indicators for monitoring the impact of crises on nutritional status.”**

---

– United Nations Administrative Committee on Coordination, Sub-Committee on Nutrition (ACC/SCN)

---

Yr. 2, Issues 6-17). This information has been prepared to facilitate the involvement of provincial institutions in monitoring the health and nutritional status of their populations.

Over the past year, the NSS has been established in seven rural provinces and four urban poor areas, in partnership with the GOI/MOH and local research institutions, and represents approximately 70% of the population of Indonesia (see Ind Cris Bul Yr. 2, Issue 2). Data is collected quarterly from more than 40,000 households and the NSS currently employs more than 400 people. The NSS is recognized for its high quality of data and complements other information systems of the GOI. As a result, the NSS can be used as a framework to monitor crisis-related programs and other activities such as the vitamin A capsule distribution program. It can play a valuable role in monitoring the GOI’s efforts to decentralize government operations. The NSS is also a useful source of information for reporting on the progress in reaching the World Summit Goals for Children and other international goals.

In addition to these achievements, the NSS has been developed as a network of partnerships that span provincial, national and international levels. The NSS is an excellent basis to link food policy, health, agriculture, and economic development sectors. Good nutrition is an important input to overall economic and social development; it is



simultaneously an outcome of the development process. The multi-sectoral design/approach of the NSS and these partnerships are the basis for monitoring the efforts in Indonesia to reduce poverty and is a good example of how nutrition surveillance systems might be developed in other countries.

In summary, the NSS has proven to be a useful tool to monitor the impact of the crisis and to communicate key information to the GOI, donors and other organizations. The following report is a collation of the Indonesia Crisis Bulletins that have been generated over the past two years from the NSS and that were distributed to a wide national and international audience.

### Financial support for the NSS

Since the re-establishment of the NSS after the start of the economic crisis, funding for the project has been obtained from a number of sources, without whose support – both in terms of finance and advocacy of the surveillance system – the work could not have been accomplished.

Of these donors, USAID has stood out in its constant support of HKI's work in nutrition surveillance since it first began in Bangladesh in 1989.

On the right is a list of these donors, presented alphabetically, and detailing the period of their funding support for the NSS.

Asian Development Bank  
December 1998 – September 1999



United Nations Children's Fund  
December 1998 – September 1999



United States Agency for International  
Development  
(Award No. 497-A-00-99-00033-00)  
September 1999 – Present



### References

<sup>1</sup> ACC/SCN (2000). *Fourth Report on the World Nutrition Situation*. Geneva: ACC/SCN in collaboration with IFPRI.

<sup>2</sup> ADB-IFPRI (2000). *Attacking the Double Burden of Malnutrition in Asia: A Synthesis of Findings from the ADB-IFPRI Regional Technical Assistance Project 5824 on Nutrition Trends, Policies and Strategies in Asia and the Pacific*. (Draft Report) Washington, June 2000.



<i>Crisis Bulletin 1: Summary of preliminary data analyses and recommendations (Sept 1998) .....</i>	<i>7</i>
<i>Re-emergence of the threat of vitamin A deficiency. Yr. 1, Iss 2, Oct 1998 .....</i>	<i>17</i>
<i>Alarming rise of iron deficiency anemia may herald 'Lost Generation.' Yr. 1, Iss 3, Oct 1998 .....</i>	<i>21</i>
<i>Have 30 years of nutritional improvement in Southeast Asia disappeared in one year of the crisis? Yr. 1, Iss 4, Oct 1998 .....</i>	<i>25</i>
<i>Why and How to prevent Vitamin A Deficiency in times of crisis. Special Edition, Yr. 1, Iss 6, Sept 1999 .....</i>	<i>29</i>
<i>High prevalence of acute malnutrition in urban slums. Yr. 1, Iss 7, Nov 1999 .....</i>	<i>33</i>
<i>Increasing coverage of high-dose vitamin A capsules to prevent crisis-induced re-emergence of vitamin A deficiency. Yr. 1, Iss 8, Dec 1999 .....</i>	<i>37</i>
<i>High prevalence of anemia among young children in urban and rural areas. Yr. 2, Iss 1, Jan 2000 .....</i>	<i>41</i>
<i>Nutrition Surveillance: How does it work? HKI Technical Programs Series. Yr. 2, Iss 2, Feb 2000 .....</i>	<i>45</i>
<i>Decreasing 'prevalence of anemia among urban children: Does it indicate increased access to micronutrient-rich foods? Yr. 2, Iss 3, Mar 2000. ....</i>	<i>49</i>
<i>Decreasing prevalence of maternal wasting: Does it indicate increased access to food? Yr. 2, Iss 4, Apr 2000 .....</i>	<i>53</i>
<i>Vitamin A Capsules: Red and Blue – What's the difference? Yr. 2, Iss 5, May 2000 .....</i>	<i>57</i>
 <i>Provincial Findings (Nov 1998-Jun 2000) series:</i>	
<i>Nutrition Surveillance in rural West Java – Key results for the period: Feb 1999-Feb 2000. Yr. 2, Iss 6, Jun-Sept 2000 .....</i>	<i>61</i>
<i>Nutrition Surveillance in Central Java – Key results for the period: Nov 1998-Nov 1999. Yr. 2, Iss 7, Jun-Sept 2000 .....</i>	<i>69</i>
<i>Nutrition Surveillance in Jakarta – Key results for the period: Jan 1999-Jan 2000. Yr. 2, Iss 8, Jun-Sept 2000 .....</i>	<i>77</i>
<i>Nutrition Surveillance in East Java – Key results for the period: Feb 1999-Feb 2000. Yr. 2, Iss 9, Jun-Sept 2000 .....</i>	<i>85</i>
<i>Nutrition Surveillance in Surabaya – Key results for the period: Jan 1999-Feb 2000. Yr. 2, Iss 10, Jun-Sept 2000 .....</i>	<i>93</i>
<i>Nutrition Surveillance in Semarang – Key results for the period: Feb-Oct 1999. Yr. 2, Iss 11, Jun-Sept 2000 .....</i>	<i>101</i>
<i>Nutrition Surveillance in Lombok – Key results for the period: Feb 1999-Feb 2000. Yr. 2, Iss 12, Jun-Sept 2000 .....</i>	<i>109</i>
<i>Nutrition Surveillance in Makassar – Key results for the period: Feb-May 1999. Yr. 2, Iss 13, Jun-Sept 2000 .....</i>	<i>117</i>

<i>Nutrition Surveillance in West Sumatra – Key results for the period: Sept-Nov 1999. Yr. 2, Iss 14, Jun-Sept 2000 .....</i>	<i>125</i>
<i>Nutrition Surveillance in urban West Sumatra – Key results for the period: Sept-Oct 1999. Yr. 2, Iss 15, Jun-Sept 2000 .....</i>	<i>133</i>
<i>Nutrition Surveillance in rural Lampung – Key results for the period: Apr-Jun 2000. Yr. 2, Iss 16, Jun-Sept 2000 .....</i>	<i>141</i>
<i>Nutrition Surveillance in South Sulawesi – Key results for the period: Apr-Jun 2000. Yr. 2, Iss 17, Jun-Sept 2000 .....</i>	<i>149</i>

# Indonesia Crisis Bulletin Year 1 Issue 1 (Sept 1998)

## Summary of preliminary data analyses and recommendations

*The first Indonesia Crisis Bulletin was part of the special report "Nutrition and Health-related Issues resulting from Indonesia's Crisis: Summary and Recommendations" produced by HKI in October 1998; subsequent Bulletins were produced in its present format*

### Facts

#### GENERAL

- The Indonesian crisis is a combination of the effects of El Nino (drought) and the economic crisis. The effects of each component of the crisis are different in each region in Indonesia.
- Political stability in the process to the new elections are greatly determined by the food insecurity levels of the population in Java, specifically in Jakarta and Surabaya.

#### FOOD INTAKE

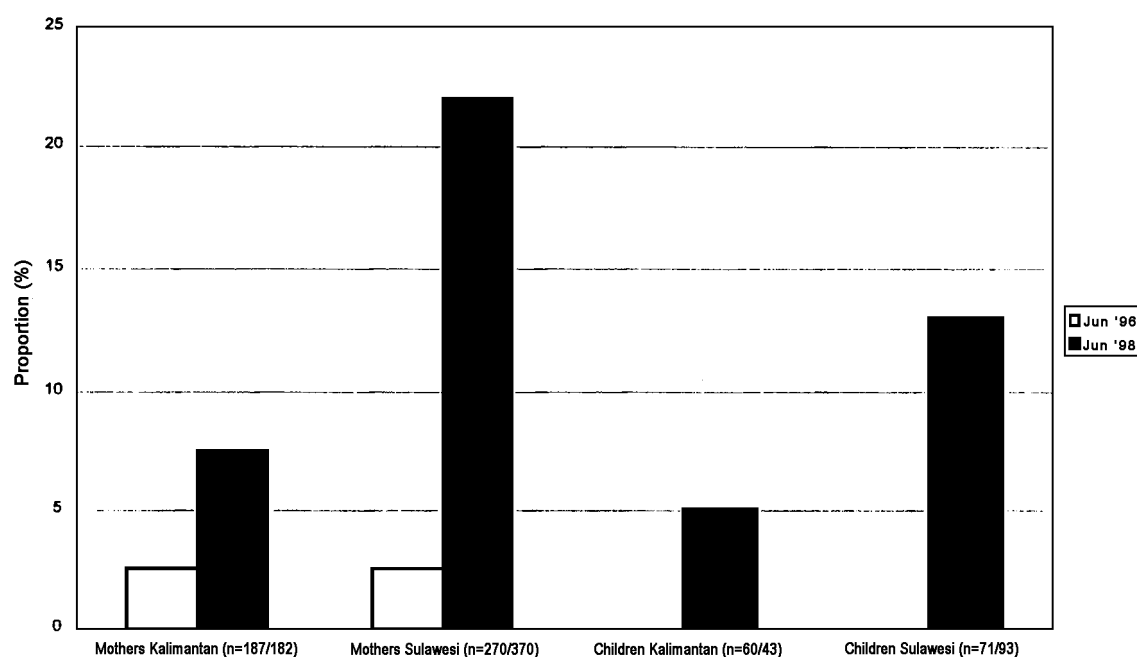
##### South Kalimantan (urban; Nov/Dec 1996-March 1998)<sup>1</sup>

- There was a decrease in the consumption of relatively expensive foods, such as eggs and milk.
- There was a decrease in the consumption of fortified noodles.

##### South Sulawesi (rural; Nov/Dec 1996-March 1998)<sup>1</sup>

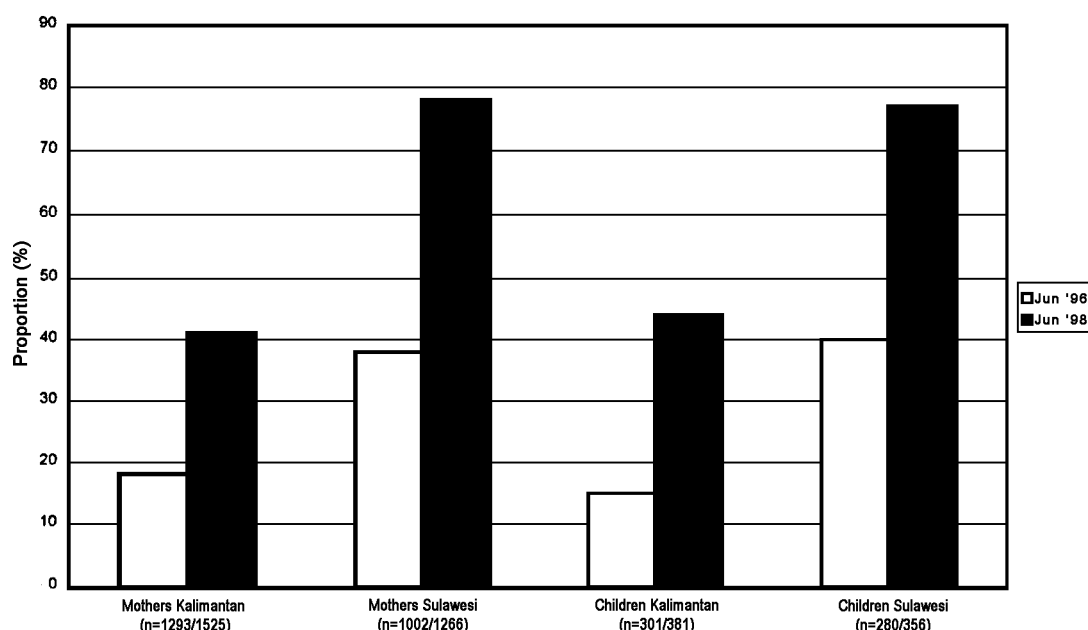
- There was a decrease in the consumption of relatively expensive foods, such as eggs and milk.
- There was a decrease in the consumption of fortified noodles.

Figure 1. Proportion of mothers and children who did not consume eggs because they were too expensive.



<sup>1</sup> Localvita: GOI/HKI/OMNI/USAID

Figure 2. Proportion of mothers and children who did not drink milk because it was too expensive.



**East Java** (Surabaya and Madura; School Year 1996/1997, School Year 1997/1998, School Year 1998/1999)<sup>2</sup>

- There was a decrease in the consumption of relatively expensive foods, such as eggs and milk.

**Central Java** (4 ecological zones: North-central, Northeast, South-central, Southeast; June/July 1996 – June/July 1998)<sup>3</sup>

- There was a decrease in the consumption of relatively expensive foods, such as eggs and milk.
- More analyses will be carried out at a later stage.

Note: animal products are rich in micronutrients (vitamin A, iron, zinc, etc). Lack of micronutrients are associated with increased risk of morbidity and mortality among pregnant women and children.

## NUTRITIONAL STATUS

**South Kalimantan** (urban; Nov/dec 1996-March 1998)<sup>1</sup>

- The nutritional status of women and children has not yet shown deterioration.

**South Sulawesi** (rural; Nov/Dec 1996-March 1998)<sup>1</sup>

- The nutritional status of women and children has not yet shown deterioration.

**East Java** (Surabaya and Madura; School Year 1996/1997, School Year 1997/1998, School Year 1998/1999)<sup>2</sup>

- Weight gain of adolescents was lower in 1997/1998 compared to School Year 1996/1997.

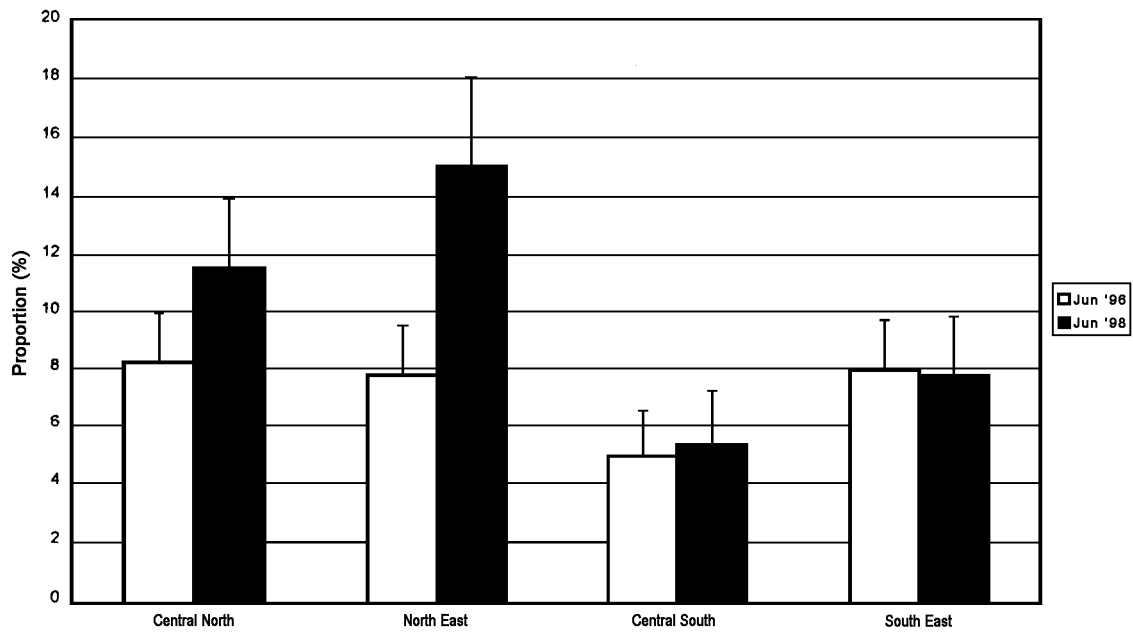
**Central Java** (4 ecological zones: North-central, Northeast, South-central, Southeast; Jun/July 1996 – June/July 1998)<sup>3</sup>

- Increase of wasting among children aged 0-35 months in North-central and Northeast Central Java.

<sup>2</sup> GIRLS: GOI/HKI/OMNI/USAID

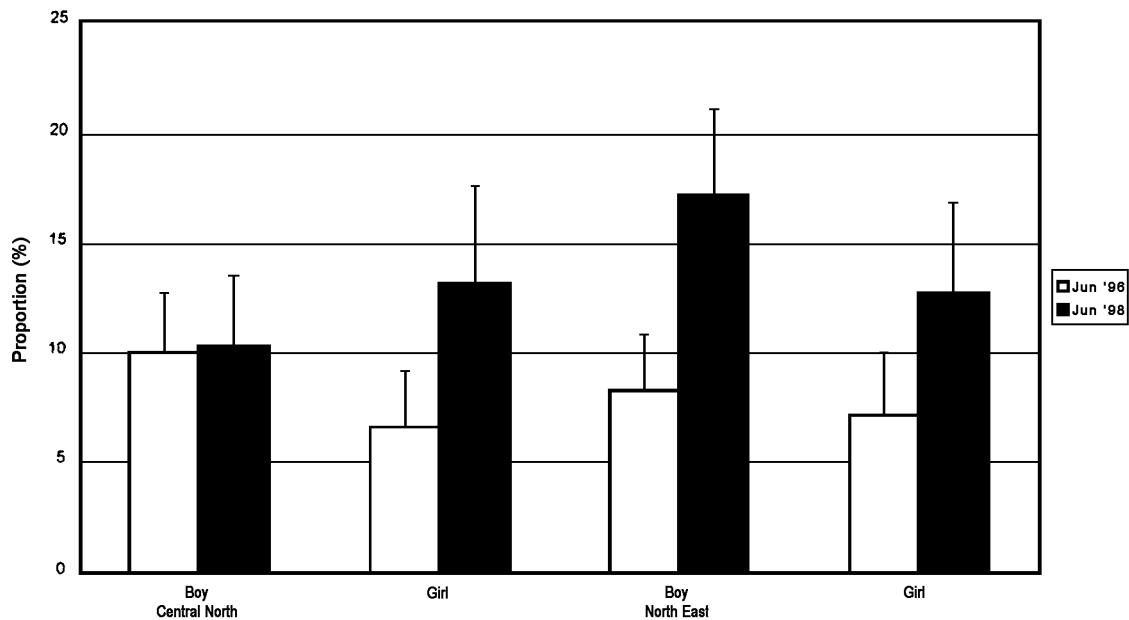
<sup>3</sup> Central Java Project: GOI/HKI/UNDIP/UNICEF/MI/USAID

Figure 3. The impact of the crisis on wasting among children aged 0-35 months by ecological zone in Central Java



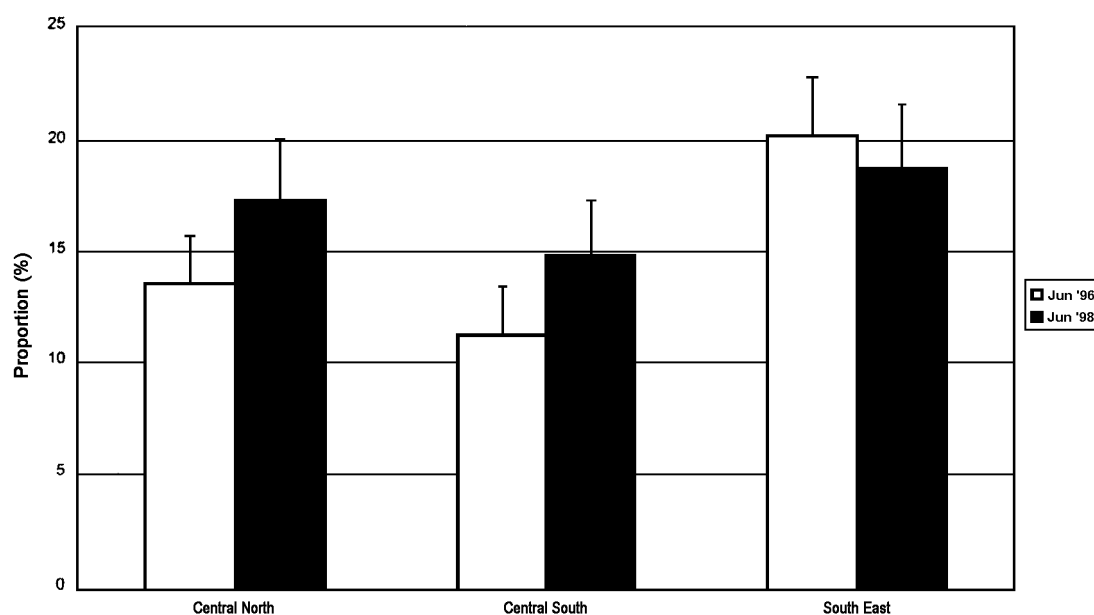
- There was no increase of wasting among children aged 0-35 months in Southeast and South-central Central Java.
- The increase in the prevalence of wasting was more pronounced among the female children.

Figure 4. Possible gender discrimination in those ecological zones with the largest change in rates of wasting among children aged 0-35 months as a result of the crisis.



- There was an increase in wasting (BMI<18.5; MUAC<22.5) among women of reproductive age in North-central and South-central South; No data was available from the Northeast zone; No differences were found in Southeast Central Java.

Figure 5. The impact of the crisis on maternal malnutrition (BMI<18.5) in three ecological zones of Central Java

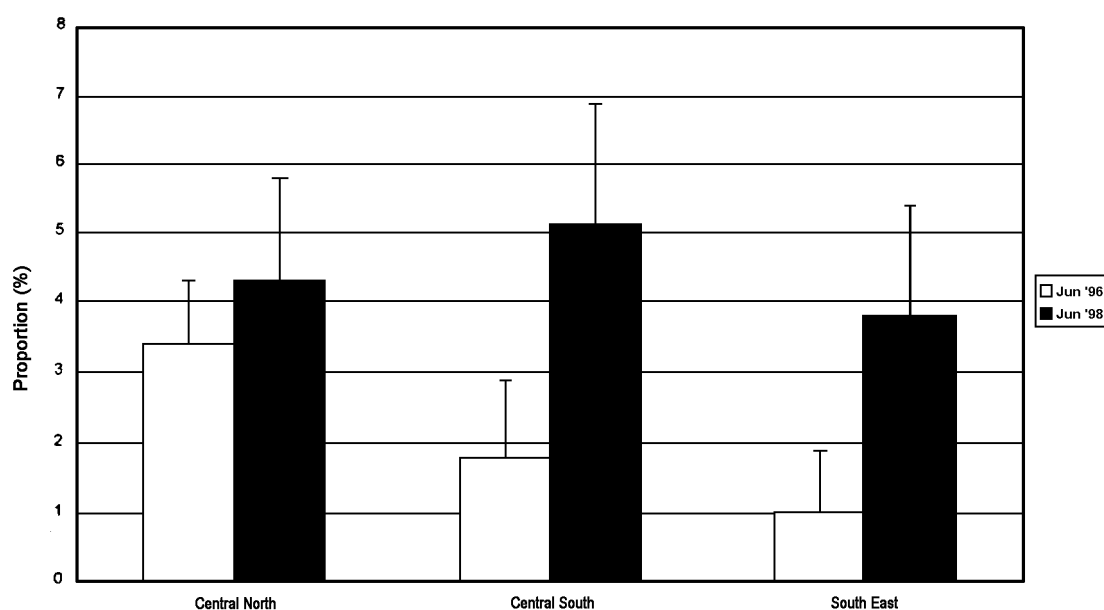


## HEALTH

**Central Java** (4 ecological zones: North-central, Northeast, South-central, Southeast; June/July 1997 – from June/July 1998)<sup>4</sup>

- There is an increase of childhood diarrhea in three ecological zones analyzed

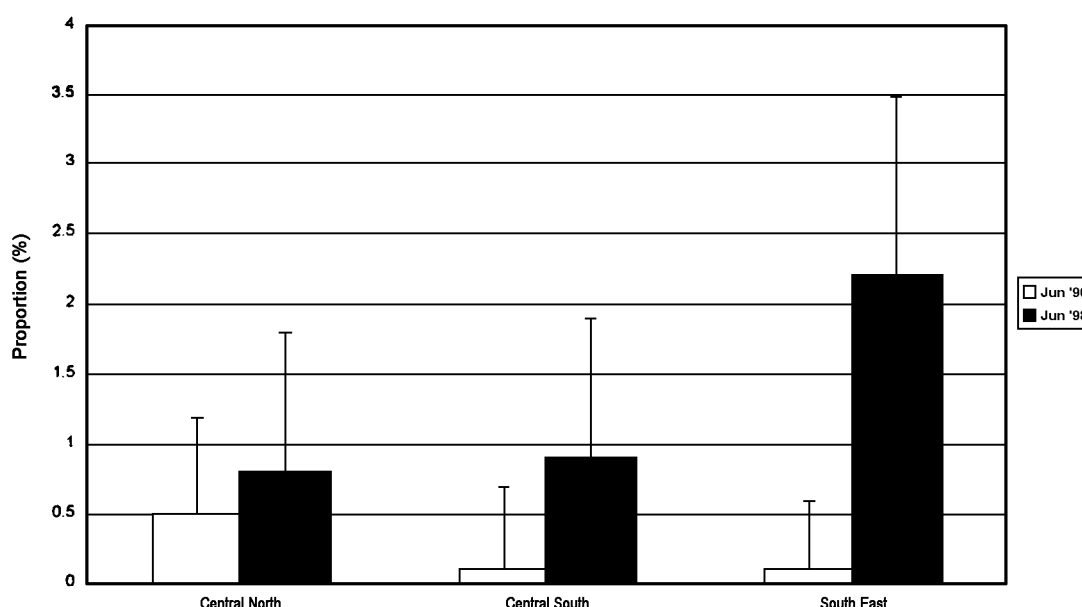
Figure 6. The impact of the crisis on the prevalence of diarrhea among children aged 0-35 months ; in three ecological zones in Central Java.



- There is an increase of maternal diarrhea in three ecological zones analyzed



Figure 7. The impact of the crisis on maternal diarrhea among women aged 15-45 years in three ecological zones in Central Java



## MICRONUTRIENT STATUS (HIDDEN HUNGER)

### South Kalimantan (urban; Nov/dec 1996-March 1998)<sup>5</sup>

- Although, there was no change in total vitamin A intake among women of reproductive age, there was a decrease in the vitamin A intake from animal sources. But this was compensated with an increase of vitamin A intake from plant sources.
- There was a significant increase in total vitamin A intake among children aged 6-35 months, which was due to an increase of both vitamin A intake from animal (significant) as well as plant sources (significant).<sup>6</sup>

### South Sulawesi (rural; Nov/Dec 1996-March 1998)<sup>5</sup>

- There was a significant decrease of vitamin A intake from plant sources and a non-statistically significant decrease in total vitamin A intake among women of reproductive age.

### East Java (Surabaya and Madura; School Year 1996/1997, School Year 1997/1998, School Year 1998/1999)<sup>7</sup>

- There was a decrease of anemia among the first grades of the SMPs due to a successful vitamin A and iron intervention.

### Central Java (4 ecological zones: North-central, Northeast, South-central, Southeast; Dec 1995/March 1997 – from June/July 1998)<sup>8</sup>

- There is an increase of anemia among women of reproductive age in North-central and South-central; no data was available from Northeast; no differences were found in South-East Central Java.

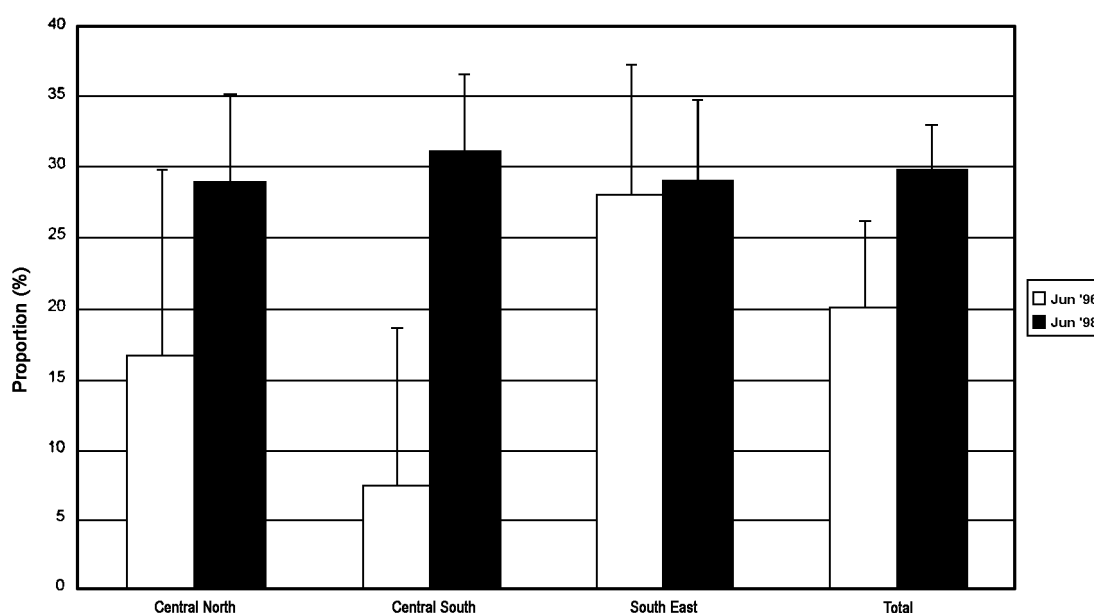
<sup>5</sup> Localvita: GOI/HKI/OMNI/USAID

<sup>6</sup> Note: South Kalimantan and South Sulawesi were both areas where a social marketing campaign was carried out to promote the intake of both animal and plant sources of vitamin A. It seems that caring practices had improved during that period

<sup>7</sup> GIRLS: GOI/HKI/OMNI/USAID

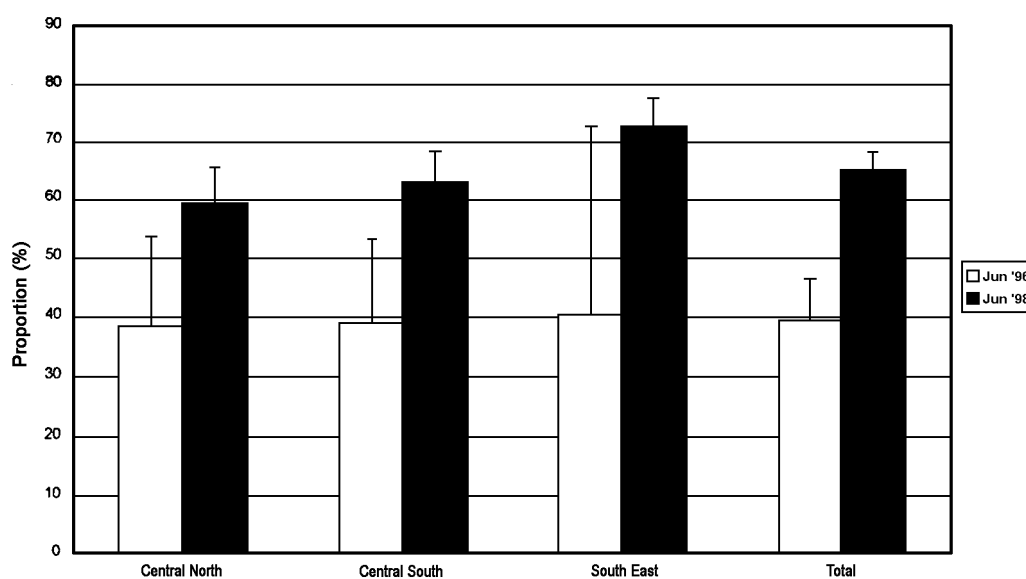
<sup>8</sup> Central Java Project: GOI/HKI/USAID/UNDIP/UNICEF/MI/USAID

Figure 8. The impact of the crisis on the prevalence of maternal anemia (<120 g/L) from three ecological zones of Central Java



- There is an increase of childhood anemia in three ecological zones.

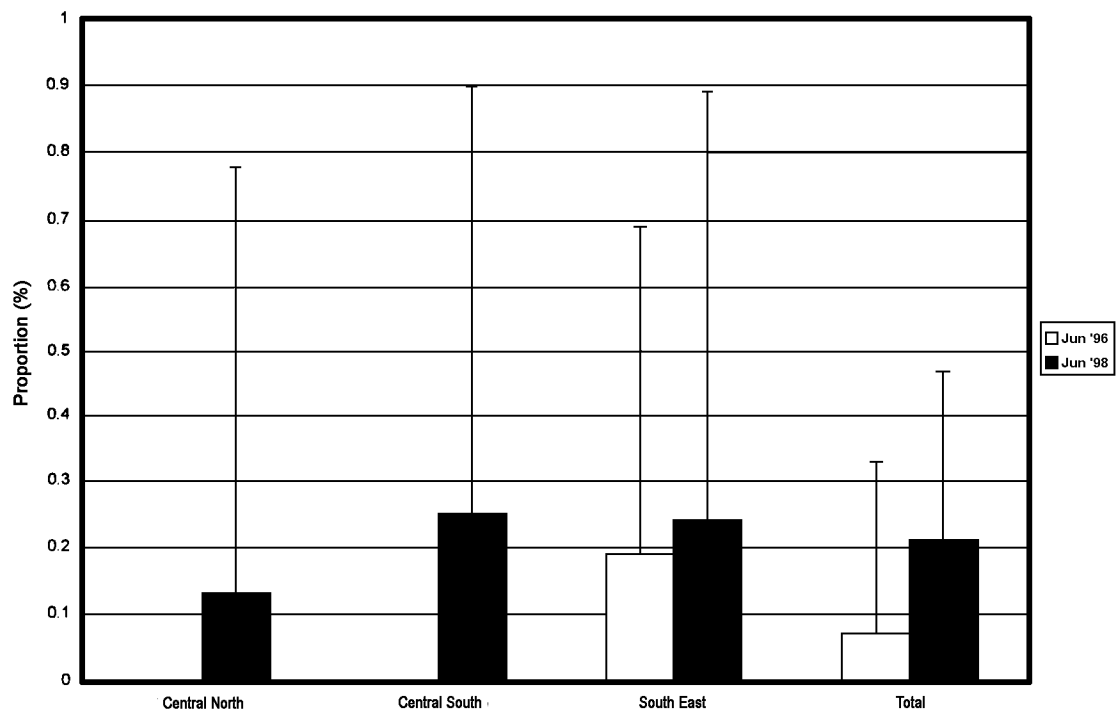
Figure 9. The impact of the crisis on the prevalence of childhood anemia (<110 g/L) in three ecological zones of Central Java



- The coverage of vitamin A capsules is low among children aged 6-23 months (6-11 months: 10%; 12-23 months: 60%), which may increase childhood mortality; the coverage of VAC among children aged 24-35 months is adequate (90%)
- There was an increase of both maternal nightblindness and childhood blindness in Central Java.

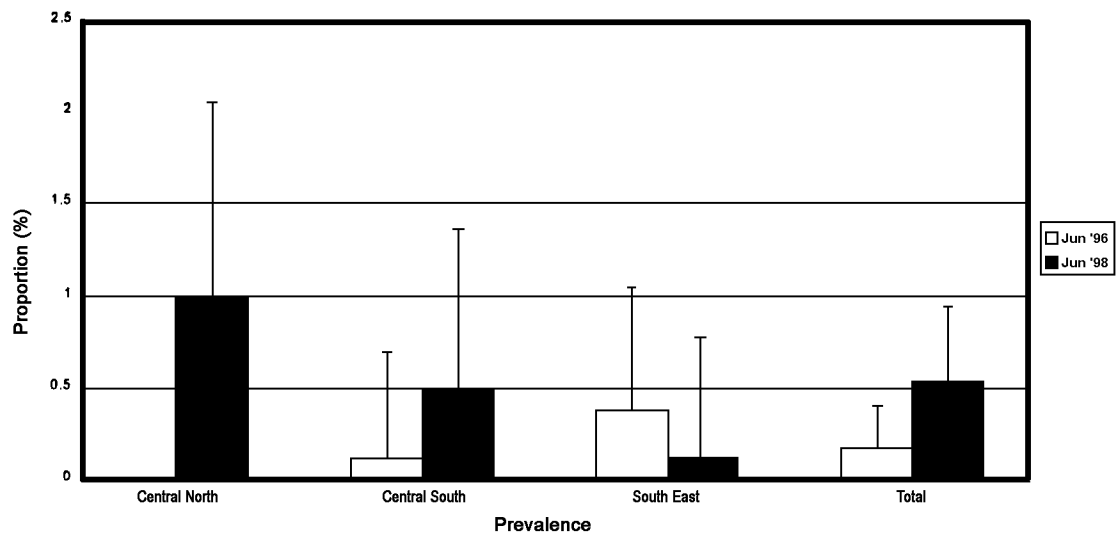
Note: vitamin A intake from animal sources is also a good proxy for intake of iron, zinc and other micronutrients.

Figure 10. The prevalence of childhood night blindness before and after the beginning of the crisis in three ecological zones of Central Java.



- There was an increase in childhood night blindness in Central Java (0% in Central North and Central South in 1996).

Figure 11. The prevalence of maternal night blindness before and after the beginning of the Indonesia crisis.



- There was an increase in maternal night blindness in Central Java (0% in Central North in 1996).

**TABLE 1. THE IMPACT OF THE CRISIS ON NUTRITIONAL AND HEALTH STATUS OF SEVERAL TARGET POPULATIONS.**

	<i>South Kalimantan</i>	<i>South Sulawesi</i>	<i>East Java (Surabaya + Madura)</i>	<i>North-central Central Java</i>	<i>Northeast Central Java</i>	<i>Southeast Central Java</i>	<i>South-central Central Java</i>
<b>Food intake</b>							
<i>Maternal egg intake</i>	▼	▼	n.a.	▼	Needs analysis	▼	▼
<i>Child egg intake</i>	▼	▼	▼	▼	▼	▼	▼
<i>Maternal milk intake</i>	▼	▼	n.a.	▼	Needs analysis	▼	▼
<i>Child milk intake</i>	▼	▼	▼	▼	▼	▼	▼
<b>Nutritional Status</b>							
<i>Maternal wasting</i>	—	—	n.a.	▲	Needs analysis	—	▲
<i>Child wasting</i>	—	—	n.a.	▲	▲	—	—
<i>Child underweight</i>	—	—	n.a.	—	▲	—	—
<i>Adolescent wasting</i>	n.a.	n.a.	▲	n.a.	n.a.	n.a.	n.a.
<b>Micronutrient Deficiencies</b>							
<i>Maternal vitamin A intake</i>	—	▼	n.a.	Needs analysis	Needs analysis	Needs analysis	Needs analysis
<i>Child vitamin A intake</i>	▲	▲	n.a.	Needs analysis	Needs analysis	Needs analysis	Needs analysis
<i>Vitamin A status</i>	Needs analysis	Needs analysis	Needs analysis	Needs analysis	Needs analysis	Needs analysis	Needs analysis
<i>Maternal anemia</i>			n.a.	▲	Needs analysis	—	▲
<i>Child anemia</i>	—	—	n.a.	▲	▲	▲	▲
<i>Adolescent anemia</i>	n.a.	n.a.	▼*)	n.a.	n.a.	n.a.	n.a.
<i>Maternal night blindness</i>	Needs analysis	Needs analysis	n.a.	▲	Needs analysis	▼	▲
<i>Child night blindness</i>	Needs analysis	Needs analysis	n.a.	▲	Needs analysis	—	▲
<b>Health</b>							
<i>Maternal diarrhea</i>	Needs Analysis	Needs analysis	n.a.	▲	Needs analysis	▲	▲
<i>Child diarrhea</i>	Needs analysis	Needs analysis	n.a.	▲	Needs analysis	▲	▲

▼ = decrease; ▲ = increase; — = No change; n.a. = not available

\*) due to intervention with vitamin A and iron supplements

## Recommendations

### GENERAL

- There is a great need for inter-agency cooperation in urban areas to develop and implement innovative approaches toward tackling:
  - food insecurity
  - lack of reliable information
- The actual number of people affected, rather than the percentage, should be the basis for food aid
- There is a need for more emphasis on micronutrient deficiencies since deficiencies of these nutrients may have major impacts on maternal and childhood mortality

- Monitoring of a possible trend toward gender discrimination is necessary
- There is a need for shorter term planning and rapid response programs to complement longer term, sustainable projects

## MONITORING AND SURVEILLANCE

- Anemia and nightblindness<sup>9, 10</sup> are the best indicators to monitor the impact of the crisis; these indicators are not collected by the existing government surveillance systems
- Food intake and food expenditure are the best intermediate indicators; these indicators are not monitored by the existing government surveillance systems
- Maternal and childhood wasting is the best anthropometric indicator; these indicators are not measured by the existing government surveillance systems
- Underweight is a good measure of longer-term impact of the crisis; this indicator is measured by the existing government surveillance systems
- The existing surveillance systems in Indonesia are internal, service-based and process-oriented; since the World Bank and other donors have recognized the tremendous leakage of project funds, there seems to be room for external monitoring of the newly designed safety net programs

## INTERVENTIONS

- As there has been a decrease in the consumption of foods of animal origin, it can be expected that there will be an even higher prevalence of micronutrient deficiencies among the already-deficient women and children:
  1. There is a need for multi-micronutrient supplementation projects targeting pregnant and lactating women in those areas with the highest rates of maternal mortality
  2. There is a need for micronutrient supplementation for female factory workers in the urban areas
  3. There is a need for improving vitamin A capsule coverage to children aged 6-23 months of age nationwide (WHO/UNICEF recommends vitamin A capsules to all children aged 6-71 months, twice yearly)
- There is a need for supplementary feeding (fortified food) for children aged 6-23 months both in urban and rural areas; there is a need for social marketing and nutrition education to make the supplementary feeding program more effective and safe

---

<sup>9</sup> Bloem MW, de Pee S, Darnton-Hill I. New issues in developing effective approaches for the prevention and control of vitamin A deficiency. *Food Nutr Bull* 1998; 19:137-48

<sup>10</sup> Christian P, West KP Jr, Khatry SK, Katz J, Shrestha SR, Pradhan EK, LeClerq SC, Pokhrel RP. Night blindness of pregnancy in rural Nepal -- nutritional and health risks. *Int J Epidemiol*, Apr 1998; 27(2): 231-7



## Re-emergence of the threat of vitamin A deficiency

**The economic crisis which has gripped Indonesia since mid-1997 is fast turning into a crisis of health and nutrition. The ravaged economy now bares the sinister – and potentially tragic – consequences of a sharply devaluated currency, high inflation, massive unemployment and the resulting decrease in consumer spending power.**

One particular micronutrient deficiency – vitamin A deficiency (VAD) – is beginning to re-emerge as a threat to public health in Indonesia. VAD can cause blindness and damage the immune system, resulting in increased risk of illness and death.

Recent data collected in a joint collaborative effort by Helen Keller International (HKI)-Indonesia, the University of Diponegoro, and the Indonesian Department of Health, compared with similar data obtained prior to the start of the crisis, has revealed a dramatically reduced intake of

micronutrient-rich foods (e.g. eggs, meat and milk) due to the increase in the prices of basic commodities and reduced purchasing power of the population (see figure 1 and 2).

This decrease in the dietary intake of vitamin A has been correlated with an increase in the prevalence of nightblindness among children aged 0-35 months (see figure 3) and an increase in the prevalence of nightblindness among women of reproductive age (see figure 4).

### What was the vitamin A situation in Indonesia before the crisis?

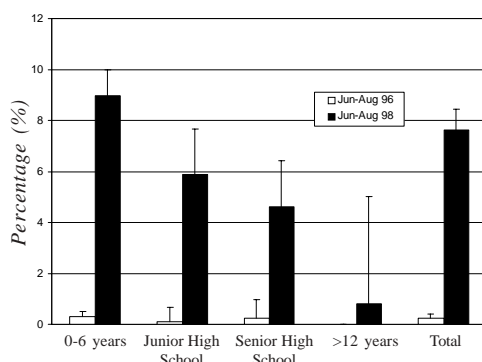
Indonesia was one of the first developing countries to identify that its high levels of severe vitamin A deficiency (VAD) constituted a serious public health problem, and to begin implementing programs to eliminate this problem. Over the last 30 years, the country has come a long way in reducing the level of severe VAD and, prior to the crisis, it was no longer considered a public health problem, except in three provinces.

The success of the government program lay in its implementation of both short-term and long-term strategies to reduce VAD. The introduction of vitamin A capsule supplementation to children aged one to five years reduced deficiency levels dramatically, within a relatively short period of time. Vitamin A supplementation, according to a 1993 World Bank report, is the most cost-effective health intervention in the world.

As a long-term measure against VAD, the government has focused on food-based strategies aimed at improving vitamin A

(continued on page 2)

*Figure 1.  
Proportion of mothers who did not consume eggs in the last week before and after the beginning of the crisis by maternal education*



## What are micronutrients?

The term 'micronutrients' refers to vitamins, trace elements (such as iron) and essential fatty acids that are integral to the proper functioning of the human body. Micronutrient deficiencies rarely occur alone; a deficiency of one micronutrient contributes to the deficiency of another. Deficiencies of micronutrients are also collectively known as 'Hidden Hunger' as this form of malnutrition is largely invisible, by all appearances.

Victims of micronutrient deficiencies need not necessarily look malnourished. Yet, the consequences of micronutrient deficiencies are dramatically far-reaching and they constitute a problem that is widespread throughout the world, having both major health and economic repercussions.

At the World Summit for Children held in New York in September 1990, political leaders from around the world endorsed the 'Declaration on Children' and targeted the year 2000 for the virtual elimination of the major micronutrient deficiencies. This goal was unanimously confirmed by 159 countries (including Indonesia) at the International Conference on Nutrition held in Rome in December 1992.

## Spotlight: Vitamin A

Reprinted from *The State Of The World's Children 1998*, UNICEF, Oxford University Press, 1998, p76

### Impact of vitamin A deficiency

Vitamin A deficiency makes children especially vulnerable to infection and worsens the course of many infections. Supplementation with vitamin A is estimated to lower a child's risk of dying by approximately 23 per cent. The deficiency is also the single most important cause of blindness among children in developing countries. [Vitamin A supplementation among pregnant women also reduces the risk of mortality by 40% to 50% — Editor]

### What vitamin A does

Vitamin A, stored normally in the liver, is crucial for effective immune-system functioning, protecting the integrity of epithelial cells lining the skin, the surface of the eyes, the inside of the mouth and the alimentary and respiratory tracts. When this defence breaks down in a vitamin A-deficient child, the child is more likely to develop infections, and the severity of an infection is likely to be greater.

Depending on the degree of the deficiency, a range of abnormalities also appears in the eyes of vitamin A-deficient children. In the mildest form, nightblindness occurs because the rods in the eye no longer produce rhodopsin, a pigment essential for seeing in the dark. In more severe forms, lesions occur on the conjunctiva and cornea that if left untreated can cause irreversible damage, including partial or total blindness.

(continued from page 1)

status by increasing the consumption of vitamin A-rich foods. Vitamin A is naturally found as retinol in breastmilk and foods from animal sources (such as eggs, meat and milk), and carotene in foods from plant sources (such as dark-green leafy vegetables, and orange and yellow fruits). Recent studies in Indonesia have shown that plant sources of vitamin A are less effective than animal sources in improving vitamin A status.

'Eating eggs at least three times a week, and colored vegetables and fruits every day, makes children healthy and smart, and mothers healthy and strong', proclaim banners, radio spots and public minibus announcements in the Gowa district of South Sulawesi, Indonesia. Messages such as this have been circulated through various media forms as part of the SUVITAL social marketing campaign aimed at promoting the increased consumption of locally-available vitamin A-rich foods to improve child survival and maternal health.

The success of such social marketing strategies have resulted in increased dietary intake of vitamin A in project sites across Indonesia, particularly Central Java, improving vitamin A status among their populations. In reference to the Central Java project, the United Nations Children's Fund (UNICEF) annual report, *The State of the World's Children 1998*, states:

*'Within three months of the start of the social marketing campaign, egg consumption by both children and mothers had increased, correlated with higher vitamin A levels'*

Yet, the situation appears to be deteriorating as the economic crisis bites deeper into the pockets of the large majority of the population, as high inflation sends food prices skyrocketing and mass lay-offs due to the economic collapse pushes greater numbers of families below the poverty line.

Figure 2.  
The proportion of children aged 12-23 months who did not consume eggs in the last week by ecological zone of Central Java

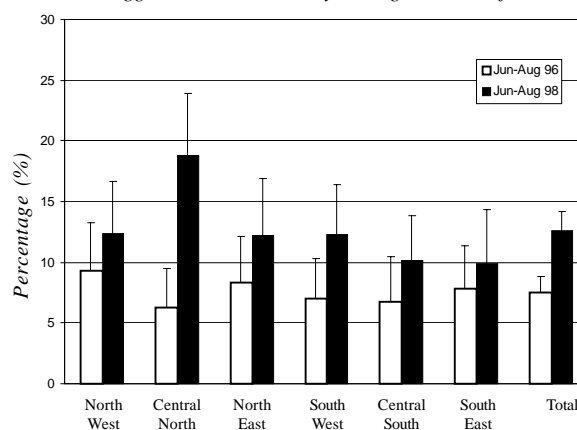
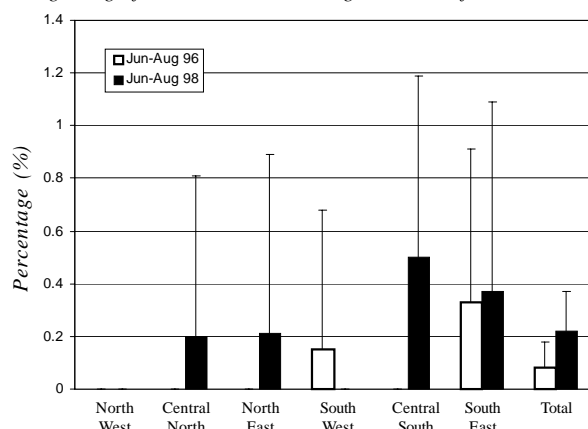




Figure 3.  
The prevalence of childhood nightblindness before and after the beginning of the crisis in six ecological zones of Central Java



## What is being done about the problem?

There is currently a great emphasis, within the government and international aid agencies, to establish and enhance a social safety net system in order to alleviate the effects of the crisis on families who have been pushed into poverty. The government's own social safety net program focuses on health and educational assistance, through supplementary feeding and scholastic grants components.

However, there is a lack of reliable information on the state of nutrition in the country relevant to the crisis. One of the most effective indicators of a re-emergence of VAD is nightblindness among both children and women.

Mild VAD causes nightblindness; an increase in the prevalence of nightblindness is a precursor of a possible rise in the prevalence of severe VAD. Maternal nightblindness is also an effective indicator of dietary vitamin A intake, while childhood nightblindness is a composite indicator of both dietary vitamin A intake and the effectiveness of existing vitamin A supplementation programs.

Food intake and food expenditure are also intermediate indicators of vitamin A intake among the population. A reduction in the intake of micronutrient-rich foods due to soaring costs indicates that long-term measures for ensuring adequate vitamin A status have been sabotaged by the economic crisis.

## What should be done?

- There is a great need for inter-agency cooperation in urban areas to develop and implement innovative approaches toward tackling food insecurity and lack of reliable information

- There is a need for more emphasis on micronutrient deficiencies since deficiencies of these nutrients may have major impacts on maternal and childhood mortality

### Monitoring and surveillance:

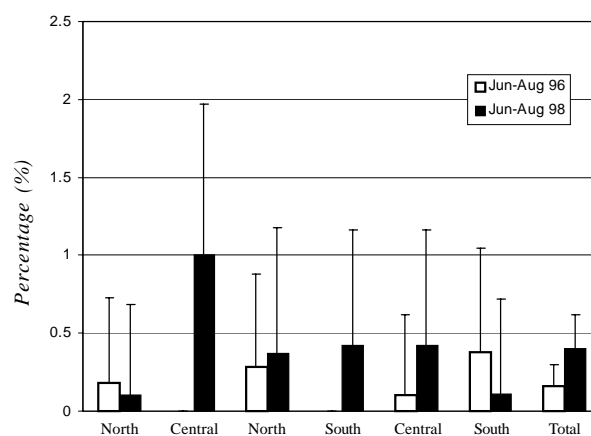
- Nightblindness among children and women should be assessed as an indicator of VAD
- Food intake and expenditure should be assessed as an intermediate indicator of VAD

### Interventions:

- As there has been a decrease in the consumption of foods of animal origin, it can be expected that there will be an even higher prevalence of micronutrient deficiencies among the already-deficient women and children:
- There is a need for multi-micronutrient supplementation projects targeting pregnant and lactating women in those areas with the highest rates of maternal mortality
- There is a need for micronutrient supplementation for female factory workers in the urban areas
- There is a need for improving vitamin A capsule coverage to children aged 6-23 months of age nationwide (WHO/UNICEF recommends vitamin A capsules to all children aged 6-71 months, twice yearly)
- There is a need for supplementary feeding (fortified food) for children aged 6-23 months both in urban and rural areas; there is a need for social marketing and nutrition education to make the supplementary feeding program more effective and safe

According to a World Bank report in 1993, vitamin A supplementation is the single most cost-effective health intervention in the world.

Figure 4.  
The prevalence of maternal nightblindness before and after the beginning of the crisis in six ecological zones of Central Java





### **Partners:**

Ministry of Health, Government of Indonesia  
University of Diponegoro, Semarang  
UNICEF

### **For information and correspondence contact:**

Martin W. Bloem, MD, PhD  
Regional Director, Asia-Pacific

Helen Keller International  
P.O. Box 4338  
Jakarta Pusat  
Indonesia

Tel 62-21-526-3872/252-6059/525-0529  
Fax 62-21-525-0529

For specific information on technical issues:

Martin W. Bloem, MD, PhD	– mwbloem@compuserve.com
Roy Tjiong, MD	– rtjiong@compuserve.com
Saskia de Pee, PhD	– sdepee@compuserve.com
Mayang Sari, MSc	– nutri1@dnet.net.id

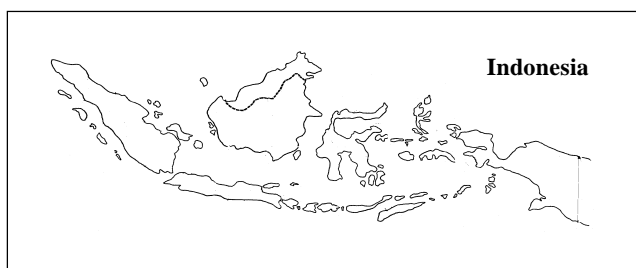
For general information:

Federico Graciano – graciano@dnet.net.id

© *Helen Keller International*

*Reprints or reproductions of portions or all of this document are encouraged, provided acknowledgement is given to the publication and publisher*

*Projects carried out by HKI Indonesia in collaboration with the above organizations are funded by United States Agency for International Development (USAID)*



## Alarming rise of iron deficiency anemia may herald 'Lost Generation'

The sharp plunge of the Rupiah in the aftermath of a regional economic crisis sweeping across Southeast Asia in mid-1997 has resulted in high inflation, massive unemployment and a consequential decline in consumer spending power. Over a year into the crisis, the full scope of its impact is just beginning to emerge, with potentially tragic consequences for a 'lost generation' of children born into hard times.

There are alarming signs that micronutrient deficiencies are on the rise – in particular, iron deficiency. Iron deficiency is the leading cause of anemia (Iron Deficiency Anemia or IDA), which is the most common nutritional disorder in the world. IDA impairs the immune system and reduces physical and mental capacity among affected populations, with a wide range of

consequences on work productivity, intellectual development and mortality.

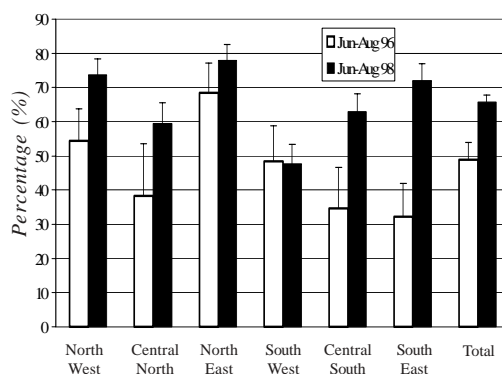
The impact of increased iron deficiency among infants and young children can be especially debilitating, as even mild anemia can impair intellectual development. Between the ages of 6 to 24 months, a child's physical development requires adequate nutrition through breastfeeding and/or complementary feeding with micronutrient-fortified weaning foods. Inadequate micronutrient intake during this crucial period of development can result in reduced intellectual capacity and stunted growth. Children born into families that cannot afford micronutrient-rich foods due to the crisis may become a 'lost generation', sowing the seeds of today's problems to be reaped in an uncertain future.

Recent data collected in a joint collaborative effort by Helen Keller International (HKI)-Indonesia, the University of Diponegoro, and the Indonesian Department of Health, compared with similar data obtained prior to the start of the crisis, has revealed a dramatically reduced intake of micronutrient-rich foods (e.g. eggs, meat and milk) due to the increase in the prices of basic commodities and reduced purchasing power of the population (see figure 3).

This decrease in dietary iron intake can be correlated with an increase in the prevalence of anemia among children aged 0-35 months (see figure 1) and an increase in the prevalence of anemia among women of reproductive age (see figure 2).

(continued on page 2)

Figure 1.  
The prevalence of childhood anemia (<110 g/L) before and after the beginning of the crisis in six ecological zones of Central Java



## What are micronutrients?

The term 'micronutrients' refers to vitamins, trace elements (such as iron) and essential fatty acids that are integral to the proper functioning of the human body. Micronutrient deficiencies rarely occur alone; a deficiency of one micronutrient contributes to the deficiency of another. Deficiencies of micronutrients are also collectively known as 'Hidden Hunger' as this form of malnutrition is largely invisible, by all appearances.

Victims of micronutrient deficiencies need not necessarily look malnourished. Yet, the consequences of micronutrient deficiencies are dramatically far-reaching and they constitute a problem that is widespread throughout the world, having both major health and economic repercussions.

At the World Summit for Children held in New York in September 1990, political leaders from around the world endorsed the 'Declaration on Children' and targeted the year 2000 for the virtual elimination of the major micronutrient deficiencies. This goal was unanimously confirmed by 159 countries (including Indonesia) at the International Conference on Nutrition held in Rome in December 1992.

## Spotlight: Iron

Reprinted from *The State Of The World's Children 1998*, UNICEF, Oxford University Press, 1998, p78

### Impact of iron deficiency

Iron deficiency anemia, the most common nutritional disorder in the world, impairs immunity and reduces the physical and mental capacities of populations. In infants and young children, even mild anemia can impair intellectual development. Anemia in pregnancy is an important cause of maternal mortality, increasing the risk of hemorrhage and sepsis during childbirth. Infants born to anemic mothers often suffer from low birthweight and anemia themselves. Causes include blood loss associated with menstruation and parasitic infections such as hookworm, but an inadequate intake of iron is the main cause.

### What iron does

The body needs iron to produce hemoglobin, the protein in red blood cells responsible for carrying oxygen. Iron is also a component of many enzymes essential for the adequate functioning of brain, muscle and immune-system cells.

A certain amount of iron is stored in the liver, spleen and bone marrow. Iron deficiency develops as these stores are depleted and there is insufficient iron absorption. In anemia, the iron deficiency is so severe that the production of hemoglobin is significantly reduced. The main symptoms and signs are paleness of the tongue and inside the lips, tiredness and breathlessness. Deficiencies of vitamin A and other micronutrients also contribute to anemia.

(continued from page 1)

## What was the iron situation in Indonesia before the crisis?

Since 1974, Indonesia has had a program of iron supplementation targeting pregnant women. In 1996, the distribution of iron syrup to under-five children in less developed villages in Eastern Indonesia was started, as well as a national campaign for the distribution of iron-folate pills to female factory workers.

Results of the 1995 National Household Health Survey found that 40.5% of under-five children suffered from anemia. Approximately 30% of female workers and 24% to 35% of school children were found to be anemic. Overall, as many as 50-70 million out of Indonesia's total population of 202 million suffered from IDA.

Iron is needed by the body in order to produce hemoglobin, the protein in red blood cells which transports oxygen from the lungs to the rest of the body. Iron is also a component of many enzymes required for the proper functioning of brain, muscle and immune-system cells.

The direct causes of anemia are inadequate iron intake through micronutrient-rich foods and low bioavailability of dietary iron. Indonesia's main staple, rice, contains little iron and is rich in phytate, which inhibits iron absorption. Foods from animal sources (e.g. eggs, meat and milk) are the best sources of dietary iron, but consumption of such foods was generally low. The consumption of foods from plant sources is high, but their iron bioavailability is low, due to inhibitors such as phytate.

## What is being done about the problem?

There is currently a great emphasis, within the government and international aid agencies, to establish and enhance a social safety net system in order to alleviate the effects of the crisis on families

Figure 2.  
The prevalence of maternal anemia (<120 g/L) before and after the beginning of the crisis in six ecological zones of Central Java

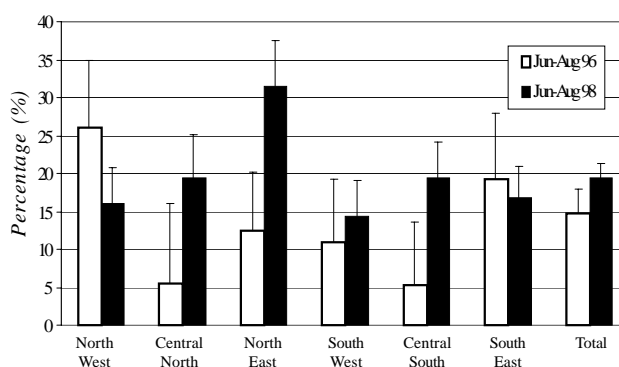
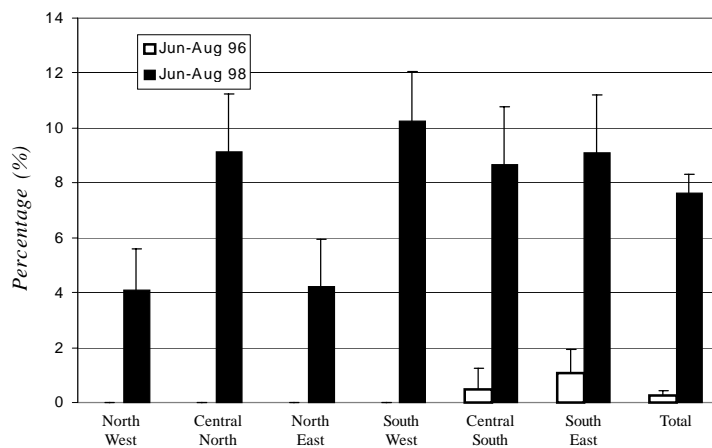


Figure 3. Proportion of mothers who did not consume eggs in the last week before and after the beginning of the crisis in six ecological zones of Central Java



who have been pushed into poverty. The government's own social safety net program focuses on health and educational assistance, through supplementary feeding and scholastic grants components.

However, there is a lack of reliable information on the state of nutrition in the country relevant to the crisis. A good indicator of iron deficiency in a population is anemia prevalence. Although anemia can also be caused by other factors, including chronic diseases and recent infection, such as parasitic infestation, iron deficiency is the most widespread cause of anemia. And although iron deficiency need not necessarily result in anemia, such cases represent a very small percentage. Therefore, an increase in anemia prevalence largely reflects an increase in the prevalence of iron deficiency.

Anemia is also an effective indicator of dietary iron intake among children. Among pregnant women and female factory workers, it is an indicator of a combination of both dietary iron intake and the effectiveness of current iron supplementation programs.

Food intake and food expenditure are also intermediate indicators of dietary iron intake among the population. A reduction in the intake of micronutrient-rich foods (mainly foods from animal sources) due to price increases indicates that the already-high levels of iron deficiency in Indonesia may increase.

## What should be done?

### General:

- There is a great need for inter-agency cooperation in urban areas to develop and implement innovative approaches toward tackling food insecurity and lack of reliable information

- There is a need for more emphasis on micronutrient deficiencies since deficiencies of these nutrients may have major impacts on maternal and childhood mortality

### Monitoring and surveillance:

- Anemia among children and women should be assessed as an indicator of iron deficiency
- Food intake and expenditure should be assessed as an intermediate indicator of iron deficiency

### Interventions:

- As there has been a decrease in the consumption of foods of animal origin, it can be expected that there will be an even higher prevalence of micronutrient deficiencies among the already-deficient women and children:
- There is a need for multi-micronutrient supplementation projects targeting pregnant and lactating women in those areas with the highest rates of maternal mortality
- There is a need for micronutrient supplementation for female factory workers in the urban areas
- There is a need for improving vitamin A capsule coverage to children aged 6-23 months of age nationwide (WHO/UNICEF recommends vitamin A capsules to all children aged 6-71 months, twice yearly)
- There is a need for supplementary feeding (fortified food) for children aged 6-23 months both in urban and rural areas; there is a need for social marketing and nutrition education to make the supplementary feeding program more effective and safe



### **Partners:**

Ministry of Health, Government of Indonesia  
University of Diponegoro, Semarang  
UNICEF

### **For information and correspondence contact:**

Martin W. Bloem, MD, PhD  
Regional Director Asia-Pacific

Helen Keller International  
P.O. Box 4338  
Jakarta Pusat  
Indonesia

Tel 62-21-526-3872/ 252-6059/ 525-0529  
Fax 62-21-525-0529

For specific information on technical issues:

Martin W. Bloem, MD, PhD	– mwbloem@compuserve.com
Roy Tjong, MD	– rtjong@compuserve.com
Saskia de Pee, PhD	– sdepee@compuserve.com
Mayang Sari, MSc	– nutri1@dnet.net.id

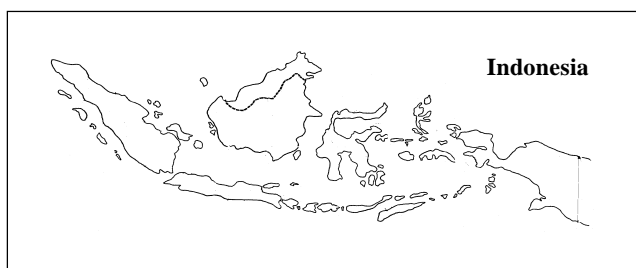
For general information:

Federico Graciano – graciano@dnet.net.id

© *Helen Keller International*

*Reprints or reproductions of portions or all of this document are encouraged, provided acknowledgement is given to the publication and publisher.*

*Projects carried out by HKI Indonesia in collaboration with the above organizations are funded by United States Agency for International Development (USAID)*



## Have 30 years of nutritional improvement in Southeast Asia disappeared in one year of the crisis?

**The average body mass index (BMI) among women of reproductive age in Central Java has dropped by 0.45 kg/m<sup>2</sup>, almost equivalent to the 0.5 kg/m<sup>2</sup> increase achieved over the past 30 years, according to the latest findings.**

Recent research by Pelletier and Rahn, based on a compilation and analysis of mean BMI in 1,432 published samples from developing countries, has shown that average BMI among women in South and Southeast Asian countries had increased from 20.9 kg/m<sup>2</sup> in 1960 to 21.4 kg/m<sup>2</sup> in 1990.<sup>1</sup>

Before the start of the crisis, mean BMI among the women in Central Java was 21.5 kg/m<sup>2</sup>. Data collected in June-August 1998, a year after the onset of the crisis, revealed that mean BMI had significantly decreased to 21.0 kg/m<sup>2</sup> ( $p < 0.000$ ). The data were collected in a collaborative effort between Helen Keller International (HKI) Indonesia, the University of Diponegoro, and the Indonesian Department of Health during June-August 1996 and June-August 1998.

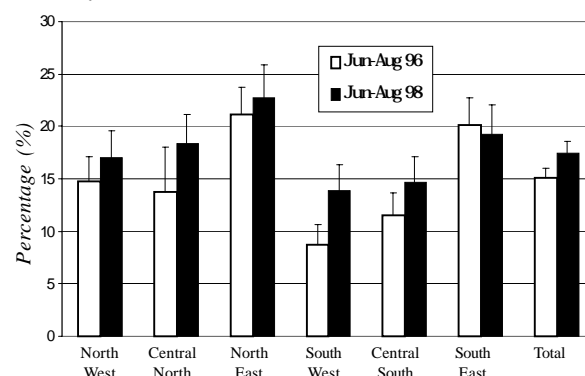
The Central Java data reveals that across almost all socioeconomic strata, as indicated by maternal education level, bodyweight among women of reproductive

age fell by approximately 1 kg between June-August 1996 and June-August 1998 [see figure 2, p2]. Consequently, the prevalence of maternal malnutrition among them has significantly increased from 15.1 per cent to 17.5 per cent ( $p < 0.000$ , see figure 1).

### How does low BMI among women relate to the crisis?

The economic crisis in Indonesia has caused the prices of basic commodities, such as rice, to increase beyond the purchasing capability of a growing number of families, many of whom have been pushed below the poverty line due to loss of jobs and increased living costs. As a result, many families have had to sacrifice the quantity and quality of their food intake.

Figure 1.  
The prevalence of maternal malnutrition (BMI < 18.5 kg/m<sup>2</sup>) in Central Java, by ecological zone, before and after the start of the crisis



<sup>1</sup> Pelletier DL, Rahn M. Trends in body mass index in developing countries. Food and Nutrition Bulletin, vol. 19, no. 3, 1998, p223-239

The Central Java data shows this decreased food intake has resulted in increased malnutrition among women of reproductive age, or *maternal malnutrition*, as indicated by the prevalence of low BMI.

BMI is calculated as an individual's weight divided by her/his height squared ( $\text{kg/m}^2$ ). A subject with a low BMI has a low bodyweight in relation to height, due to temporarily or chronically inadequate food intake. Maternal malnutrition expressed by BMI is a good and early indicator of the population's food insecurity [see table below], because very often, a woman reduces her own food intake before reducing that of her children and/or her husband.

Because the most tangible impact of the crisis is the reduction in real household income (and, thus, the reduction in food intake), the most effective indicator of the crisis' impact is maternal BMI.

Table 1.

Prevalence of low BMI ( $<18.5 \text{ kg/m}^2$ ) among the adult population and the severity of food insecurity<sup>2</sup>

Prevalence of BMI $<18.5 \text{ kg/m}^2$	Severity of food insecurity
3-5%	Normal, no food insecurity
5-9%	Warning sign, monitoring required
10-19%	Poor situation
20-39%	Serious situation
$\geq 40\%$	Critical situation

## What are the consequences of a lower BMI?

### Reduced work capacity:

The productivity of Indian male industrial workers with a BMI of  $16.5 \text{ kg/m}^2$  was found to be 1.5 times lower than that of workers with a BMI of  $23 \text{ kg/m}^2$ .

### Increased morbidity and mortality:

A low BMI reduces resistance to infection. The

number of days ill among Rwandan women with a BMI below  $17 \text{ kg/m}^2$  was 5.5 times higher than women with a BMI above  $18.7 \text{ kg/m}^2$ . A study in India found that the annual death rate among men with a BMI below  $16 \text{ kg/m}^2$  was almost three times that of men with a BMI above  $18.5 \text{ kg/m}^2$ .

### Less energy available for other activities:

Energy expenditure is reduced when BMI is lower. Often, this means that obligatory needs are still met, but that time and energy spent on activities such as housework, care and leisure activities is reduced. This has a negative impact on food preparation and childcare.

### Greater risk of pregnancy complications:

A lower BMI is also associated with complications in pregnancy, such as reduced intrauterine growth and low birthweight babies.

### Reduced quality of breastmilk:

A reduction of the nutritional status of the mother will also reduce the quality of her breastmilk and hence result in reduced quality of the food consumed by her breastfed child.

Maternal malnutrition, as indicated by a low BMI, will also have indirect repercussions on all sectors of society, including:

- Increased risk of infant mortality due to the increased risk of complications during pregnancy
- Increased risk of child intellectual and physical impairment due to decreased maternal caring practices and/or disease or infection
- Decreased level of social reproductive activities, such as household chores, child care, exercise and general socialization
- Decreased output in the workplace resulting in lost productivity and its negative impact on the economy

<sup>2</sup> World Health Organization, *Physical status: the use and interpretation of anthropometry. Report of a WHO expert committee*. WHO, Geneva, 1995

Figure 2. Maternal bodyweight, by education level, before and after the start of the crisis

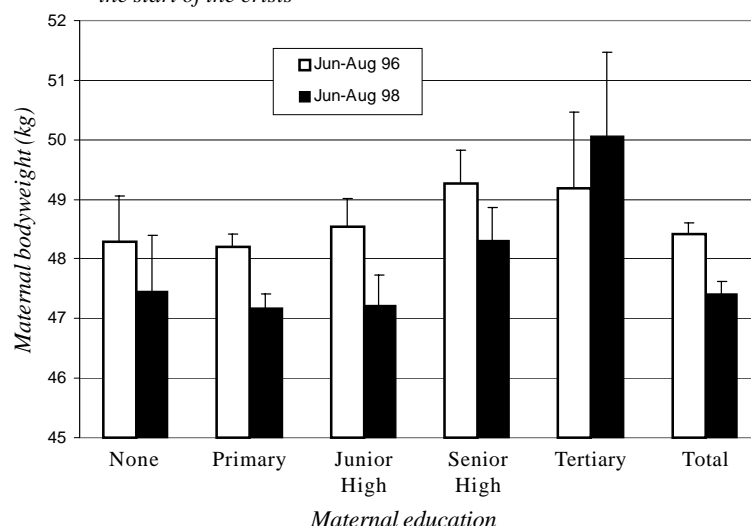
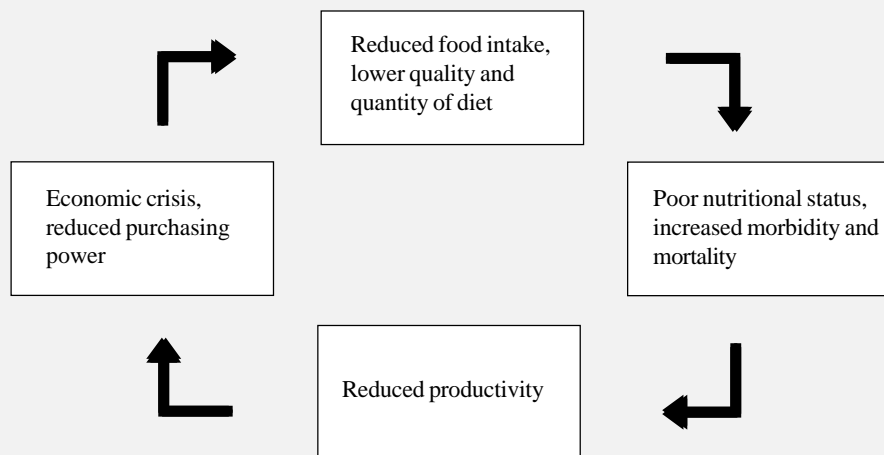




Figure 3. The self-perpetuating cycle of the economic crisis



### The vicious cycle of the crisis' impact

Maternal malnutrition is part of a vicious cycle which, in this case, begins with the trappings of crisis-induced poverty, that translates to low food intake, leading to malnutrition. Malnutrition perpetuates itself through decreased work output due to decreased stamina and more frequent, more severe and more protracted illnesses, resulting in lost productivity in the work place and at home.

Lost economic productivity results in, microcosmically, low-to-no chance of improvement of personal socio-economic conditions, and on a macrocosmic scale, perpetuation of the economic crisis. On both levels, it ensures the cycle of poverty, malnutrition and 'lost economy' continues if nothing is done to break it.

## Recommendations

### General:

- There is a great need for inter-agency cooperation in urban areas to develop and implement innovative approaches toward tackling:
  - food insecurity
  - lack of reliable information
- There is a need for shorter term planning and rapid response programs to complement longer term, sustainable projects

### Monitoring and surveillance:

- Maternal malnutrition is the best anthropometric indicator for monitoring the impact of the economic crisis
- Food intake and food expenditure are the best intermediate indicators for monitoring the impact of the crisis, as well as for monitoring the coverage, effectiveness and performance of food-aid programs and crisis-related safety net programs

- Maternal malnutrition and childhood wasting are the best anthropometric indicators for monitoring the effectiveness and performance of food-aid programs and crisis-related safety net programs

### Interventions:

- Pregnant and lactating women should also be a target group of food aid programs and crisis-related safety net programs
- Food aid and supplementary foods should provide micronutrients, in addition to calories and protein  
[Please refer to the *Indonesia Crisis Bulletin*, issues 2 and 3, for reports on the increase of micronutrient deficiencies as a result of the crisis.]



**Partners:**

Ministry of Health, Government of Indonesia  
University of Diponegoro, Semarang  
UNICEF

**For information and correspondence contact:**

Martin W. Bloem, MD, PhD  
Regional Director, Asia-Pacific

Helen Keller International  
P.O. Box 4338  
Jakarta Pusat  
Indonesia

Tel 62-21-526-3872 / 252-6059 / 525-0529  
Fax 62-21-525-0529

For specific information on technical issues:

Martin W. Bloem, MD, PhD	• mwbloem@compuserve.com
Roy Tjiong, MD	• rtjiong@compuserve.com
Saskia de Pee, PhD	• sdepee@compuserve.com
Mayang Sari, MSc	• nutri1@dnet.net.id

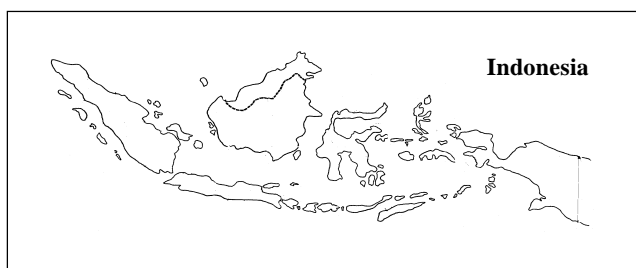
For general information:

Federico Graciano	• graciano@dnet.net.id
-------------------	------------------------

© *Helen Keller International*

*Reprints or reproductions of portions or all of this document are encouraged, provided acknowledgement is given to the publication and publisher*

*Projects carried out by HKI Indonesia in collaboration with the above organizations are funded by United States Agency for International Development (USAID)*



## CRISIS BULLETIN

## — Special Edition —

Why and How to prevent Vitamin A  
Deficiency in times of crisis

**With the prevalence of Vitamin A Deficiency (VAD) increasing as a result of reduced micronutrient-rich food intake, Vitamin A supplementation has become even more important to protect vulnerable groups against infections and diseases resulting from reduced immuno-competence.**

Communicable diseases, such as measles, diarrhea, and acute respiratory infections (ARI) are some of the threats to the health and survival of individuals, especially children and women, among the poorer segments of the population (as the GOI/HKI NSS has shown), particularly those living in urban slums and other such overcrowded conditions, such as in refugee camps.

These diseases spread best in situations of overcrowding, where sanitary conditions are inadequate and access to food is limited. These circumstances are given a) among the poor and, in particular, among those individuals who live in urban slums, b) in camps for refugees or displaced people who had to flee their homes due to natural catastrophes (i.e. floods or droughts) or political unrest. In both situations, access to adequate food proves difficult, either due to lack of financial means, non-availability of food or other impairing factors.

In the case of refugees and/or displaced people, additional circumstances need to be considered. Refugees and displaced people are prone to be highly susceptible to infection and diseases as their health and nutritional status are most often far from satisfactory.

There are a number of reasons for this: a) Displaced people often belong to the poor segments of a population and have mostly consumed, in the Indonesian context for example, an unsatisfactory diet due to limited/reduced purchasing power (impact of economic crisis); b) therefore, on arriving at camps or shelters, they are already deprived

and have little bodily stores left (i.e. the time to reach new shelter can take days or weeks) and; c) their coping mechanism is diminished and any hazardous effect in terms of unsanitary conditions, imbalanced diets, etc., will lead to a higher susceptibility to illness, particularly in the manifestation of micronutrient deficiencies (VAD, Iron Deficiency Anemia, and others).

Some micronutrients, such as Vitamin A, play an important role for the maintenance of the immune system. A lack of an appropriate diet containing these much-needed micronutrients will ultimately lead to reduced immuno-competence. This is when the 'vicious cycle' begins between reduced immuno-competence (due to the lack of micronutrients) and higher susceptibility to communicable diseases (due to reduced immuno-competence, lack of micronutrients and adequate food supply and intake). Ultimately, deaths will occur and children, due to their vulnerability, will be the first to die.

Vitamin A and its relationship to childhood mortality and morbidity has been clearly recognized over the past years and some of the pioneering research has been conducted in Indonesia by a consultant working for HKI together with the Government of Indonesia (see footnote 1 in box, *History of GOI/HKI collaboration*, p2, col. 1).

However, the implications of VAD vary according to the group at risk. In pre-school children and pregnant women, VAD can lead to increased risk of mortality and morbidity.

(Continued on p2, col. 2)

## History of GOI/HKI collaboration

In 1915, McCollum called the factor that was essential for the survival of animals 'fat soluble A'. By 1920, it was known that a lack of vitamin A caused growth retardation, xerophthalmia and a reduced resistance to infection. The VAD problem disappeared from Europe once butter and margarine fortified with vitamin A were consumed. In developing countries, the full magnitude of the problem only became known in the 1960s-70s.

The first international meeting on VAD, held in Hyderabad, India, in 1972 was attended by an Indonesian delegation consisting of Dr Darwin Karyadi, Dr Katari N, Dalip Singh and Dr Slamet Santosa Soegianto. That same year, HKI's (then known as the American Foundation for the Overseas Blind) services were augmented with a new component, the prevention of blindness, of which the first focus was xerophthalmia. The first country to work on this was Indonesia.

The Government of Indonesia (GOI) developed a prevention program to which HKI provided technical assistance and personnel for evaluation. Based on the so-called Nutritional Blindness Prevention Project, coordinated by Dr. Ignatius Tarwotjo of the Indonesian Government and Dr. Alfred Sommer of the Johns Hopkins University (JHU) in the US,

- efforts to introduce VA capsule distribution nationwide were increased;
- the prevalence and consequences of VAD became better known;
- and the Aceh (North Sumatra) study, which was the first to detect a mortality reduction (by 34%) by distributing high-dose VA capsules<sup>i</sup>, was initiated.

Since this historical undertaking and over the next 20 years, HKI has been involved in

- the development of social marketing approaches for the distribution of high-dose VA capsules,
- scaling up to a national VA-capsule distribution program,
- MSG-fortification trials<sup>ii,iii</sup>,
- supporting the development of nutrition laboratory facilities,
- improving the micronutrient status of female adolescents through schools,
- and the social marketing of vitamin A-rich foods.

HKI's work in Indonesia has been supported by the US Agency for International Development (USAID), Opportunities for Micronutrient Interventions (OMNI), the Micronutrient Initiative (MI), the United Nations Children's Fund (UNICEF), and private donors.

<sup>i</sup> Sommer A, Tarwotjo I, Djunaedi E et al. *Impact of vitamin A supplementation on childhood mortality: a randomised controlled community trial*. Lancet 1986; 8491: 1169-1173.

<sup>ii</sup> Muhilal, Permaesih D, Idjradinata R, Muherdiyantiningsih, Karyadi D. *Vitamin A-fortified monosodium glutamate and health, growth and survival of children: a controlled field trial*. Am J Clin Nutr 1988; 48: 1271-1276.

<sup>iii</sup> Muhilal, Murdiana A, Azis I, Saidin S, Jahari AB, Karyadi D. *Vitamin A-fortified monosodium glutamate and vitamin A status: a controlled field trial*. Am J Clin Nutr 1988; 48: 1265-1270.

## Benefits of improved Vitamin A Status<sup>1</sup>

- The survival chances of children aged 6 months to 6 years are dramatically increased by improving Vitamin A status, as their risk of mortality from measles is reduced by about 50%, from diarrhea by about 40%, and overall mortality by 25-35%.
- Improved Vitamin A status among deficient children reduces the severity of infectious illnesses, particularly measles and chronic diarrhea, and is associated with a reduced rate of hospital admissions and reduced need for out-patient services, therefore lowering the overall cost of health services.

<sup>1</sup> Source: *Vitamin A Global Initiative – A Strategy for Acceleration of Progress in Combating Vitamin A Deficiency*. (Consensus of an Informal Technical Consultation convened by UNICEF/MI/WHO/CIDA/USAID)

(Continued from p1)

Supplementation with Vitamin A has shown a 35% reduction in childhood mortality (Asia), and 40-50% reduction in maternal mortality.

It is obvious that immediate action to provide Vitamin A is needed and highly recommended. In the case of measles, i.e. it has been shown that the improvement of Vitamin A status in deficient children leads to a 50% reduction of measles-related mortality, morbidity and blindness.

The current situation in Indonesia requires a close monitoring of possible VAD and other micronutrient deficiency outbreaks as well as close monitoring of increased micronutrient needs due to more frequent cases of infectious diseases.

On the next page is a summary that presents the latest guidelines issued by the WHO/UNICEF/IVACG Task Force for the case management of VAD. In situations of crisis, Table 2 is of particular importance, as it describes the case-management for children at high risk, who are actually children with a history of chronically inadequate food intake, poor health and acute diseases, i.e. diarrhea, measles, severe malnutrition, and others.

## GENERAL REFERENCES:

1. Bloem MW, S Farooq, A. Kuttub. *Vitamin A deficiency and malnutrition in southern Iraq: rapid assessment report, 14-26 May 1991*. Helen Keller International/Save the Children/UNICEF.
2. Wijnroks M, Bloem MW, Islam N, Rahman H, Das SK, Hye A, Hall G. *Surveillance of the Health and Nutritional Status of Rohingya Refugees in Bangladesh*. Disasters 17(4):348-56, 1993.
3. Berry-Koch A, Moench R, Hakewill P, Dualeh M. *Alleviation of nutritional deficiency diseases in refugees*. Food and Nutrition Bulletin 12(2):106-12, 1990.
4. Marion Kelly. *Infant Feeding in Emergencies*. Disasters, 17(2):110-21, 1993.

**Universal distribution. (Table 1)** Periodic distribution for prevention of VAD to:

- All preschool-age children, especially children 6 months to 5 years of age and children in high-risk regions
- All mothers in high-risk regions within 8 weeks of delivery (In the Indonesian context, within 30 days of delivery)
- High-risk groups, such as refugees

The timing of the distribution depends on the dosage, season, logistic constraints and available resources. The mode of distribution should make Vitamin A available before a season of special risk.

**Targeted distribution to high-risk children. (Table 2)** Distribution targeted at:

- Infants and children with measles, diarrhea, respiratory disease, chickenpox, other severe infections, or severe protein energy malnutrition
- Infants and children living in the vicinity of children with clinical VAD

Vitamin A supplementation in targeted distribution helps to re-establish bodily reserves depleted by chronic illness, protecting against VAD as well as the severity of infections. Measles morbidity and mortality is also reduced.

A child who has received a high-dose supplement within the last 30 days should not receive an additional targeted dose.

**Targeted distribution to pregnant women.** Pregnant women have an increased risk of VAD, especially in populations where VAD is endemic. A significant number of pregnant women develop night blindness, which is a sign of mild VAD. A daily dose of 10,000 IU or a weekly dose of 25,000 IU can be provided to improve the Vitamin A status of mother and fetus. If severe signs of active xerophthalmia occur, the treatment schedule in Table 3 can be administered, weighing the possible teratogenic effect or other risks of a high dose of Vitamin A to the fetus against the consequences of VAD on the woman and her fetus.

**Treatment of xerophthalmia. (Table 3)** Xerophthalmia is a clinical manifestation of severe VAD and occurs in several stages: night blindness, conjunctival xerosis with Bitot's spots, corneal xerosis, corneal ulceration, and keratomalacia. Oral doses of Vitamin A should be administered immediately upon diagnosis of xerophthalmia. The treatment schedule in Table 3 applies to individuals of all ages, except women of reproductive age. Women of reproductive age with night blindness or Bitot's spots should be treated with a daily oral dose of 5,000-10,000 IU (not exceeding 10,000 IU; may be substituted with a weekly dose of 25,000 IU) of Vitamin A for at least four weeks.

**Treatment of children during measles.** The treatment schedule in Table 3 is also recommended as the optimal therapy to treat children during episodes of measles. Children suffering from VAD and measles at the same time are at risk of serious and potentially fatal complications, hence immediate treatment with Vitamin A supplementation – which has been shown to reduce the risk of excessive measles case-fatality – should be provided upon diagnosis.

Sources: *Vitamin A supplements*. Prepared by a WHO/UNICEF/IVACG Task Force. World Health Organization, Geneva, 1997.

*Pedoman Pemberian Kapsul Vitamin A Dosis Tinggi (High-dose Vitamin A Capsule Distribution Manual)*. Ministry of Health, Republic of Indonesia/UNICEF/HKI, 1993.

**Table 1. High-dose universal-distribution schedule for prevention of VAD**

Target group	Dosage
Infants < 6 months of age <sup>a</sup>	50,000 IU orally (not yet a program in Indonesia)
– Non-breastfed infants	
– Breastfed infants whose mothers have not received supplemental vitamin A	
Infants 6-12 months of age	100,000 IU orally, every 4-6 months <sup>b</sup>
Children > 12 months of age	200,000 IU orally, every 4-6 months <sup>b</sup>
Mothers	200,000 IU orally, within 8 weeks of delivery (within 30 days of delivery in the Indonesian context)

a. Programmes should ensure that infants < 6 months of age do not receive the larger dose intended for mothers. It may therefore be preferable to dose infants with a liquid dispenser to avoid possible confusion between capsules of different dosages.

b. Evidence suggests Vitamin A reserves in deficient individuals can fall below optimal levels 3-6 months following a high dose; however, dosing at 4-6 month intervals should be sufficient to prevent serious consequences of VAD.

**Table 2. High-dose prevention schedule for children at high-risk of VAD**

Target group	Dosage
Infants < 6 months of age	50,000 IU orally <sup>a</sup>
Infants 6-12 months of age	100,000 IU orally <sup>a</sup>
Children > 12 months of age	200,000 IU orally <sup>a</sup>

a. Those known to have received a routine high-dose Vitamin A supplement within the last 30 days should not receive an additional dose.

**Table 3. Treatment schedule for xerophthalmia for all age groups except women of reproductive age**

Timing	Dosage <sup>b</sup>
Immediately on diagnosis	
– Infants < 6 months of age	50,000 IU
– Infants 6-12 months of age	100,000 IU
– Children > 12 months of age <sup>a</sup>	200,000 IU
Next day	Same age-specific dose <sup>c</sup>
At least 2 weeks later	Same age-specific dose <sup>d</sup>

a. Caution: Women of reproductive age with night blindness or Bitot's spots should receive daily doses  $\leq$  10,000 IU, or weekly doses of 25,000 IU. However, all women of childbearing age, whether or not pregnant, who exhibit severe signs of active xerophthalmia (i.e. acute corneal lesions) should be treated as above.

b. For oral administration, preferably in an oil-based preparation.

c. The mother or other responsible person can administer the next-day dose at home.

d. To be administered at a subsequent health service contact with the individual

## HELEN KELLER

INTERNATIONAL

### For information and correspondence, contact:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

---

• Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com

• Dr. Regina Moench Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id  
Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

*For general enquiries:*  
Federico Graciano  
E-mail: fgrac@cbn.net.id

• Dr. Roy Tjiong  
Medical Director/Deputy Director  
E-mail: rtjiong@compuserve.com

• Dr. Saskia de Pee  
Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

• Mayang Sari  
Head of Nutrition  
Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

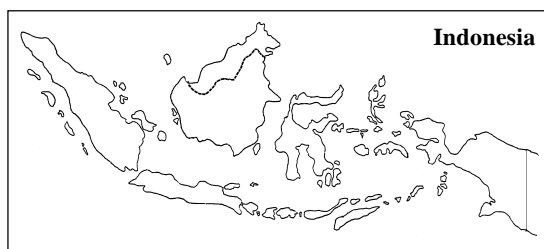
---

© 1999 Helen Keller International

*Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher*

*Projects carried out by HKI-Indonesia in collaboration with the above institutions are funded by the United States Agency for International Development (USAID).*

*This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.*





## CRISIS BULLETIN

High prevalence of acute  
malnutrition in urban slums

Indonesia has come a long way since the start of the economic crisis. With reforms underway, analysts expect economic recovery to come in the next 3-5 years. However, the crisis has had a significant impact on the health and nutrition of the population, such as the high prevalence of acute malnutrition found in urban slums in Indonesia's largest cities in the first half of 1999 reported in this Bulletin. Although the country is beginning to recover from the crisis, such problems will not disappear overnight and still require unfailing attention.

In the first half of 1999, the proportion of children aged 12-23 months with a too low bodyweight in comparison to their height, was between 20-30% in the urban slums of Jakarta, Surabaya and Ujung Pandang. Such high levels of acute malnutrition, or *wasting*, are usually only detected under emergency or disaster conditions,<sup>1</sup> and indicate that there is a very serious lack of food at the household level.

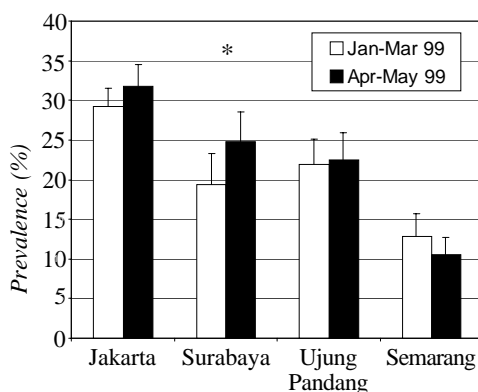
In order to assess the impact of Indonesia's economic crisis on nutrition and health, the HKI/GOI-MOH Nutrition Surveillance System collects data among 30,000-40,000 households in a variety of urban and rural areas of Indonesia 3-4

times per year. In Jan-Mar '99 and Apr-May '99, data were collected on children younger than five years and their mothers in four urban slum areas (Jakarta, Surabaya, Ujung Pandang and Semarang) and four rural areas (West Java, Central Java, East Java and Lombok).

Figures 1 and 2 show the prevalence of wasting (too low weight-for-height, WH) among children aged 12 – 23 mo old in urban slum areas and in rural areas, respectively. In Jakarta, Surabaya and Ujung Pandang 20-30% of the children was wasted. In rural Java, Lombok and Semarang 8-17% of the children was wasted. While the proportion that was

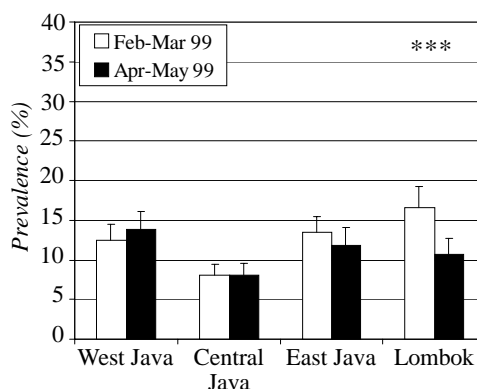
(Cont'd on p2, col. 1)

**Figure 1. Prevalence of wasting (Z-score for WH <-2 SD) among urban children aged 12-23 mo old in Jan-Mar 1999 and Apr-May 1999.** Bars indicate 95% Confidence Interval (CI) inflated for design effect.



\*Significant difference between rounds in an area,  $p < 0.05$ , Chi-square test corrected for design effect.

**Figure 2. Prevalence of wasting (Z-score for WH <-2 SD) among rural children aged 12-23 mo old in Feb-Mar 1999 and Apr-May 1999.** Bars indicate 95% CI inflated for design effect.



\*\*\* Significant difference between rounds in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

## Interpreting wasting among children and mothers

Wasting, or too low weight-for-height, is a sign of an acute shortage of food. In the reference population, 2.3% of the children fall within this category ( $<-2$  SD). And, of the 52 studies conducted in developing countries between 1974-1993 of which the prevalence of wasting is reported in the reference book on anthropometry published by WHO<sup>1</sup>, only three studies found a prevalence higher than 20%. One study, conducted in Sri Lanka, found 21.5%, while the other two studies were conducted under emergency or disaster conditions and found 37.1% (Somalia) and 71.9% (Southern Sudan). Consequences of such a poor food intake, which results in wasting, include growth faltering, reduced resistance to infection and hence higher morbidity and mortality, and failure to thrive which, when sustained for a relatively long period of time, may affect a child's mental development.

Among adults, wasting is defined as a body mass index (calculated as  $\text{weight/height}^2$ )  $< 18.5 \text{ kg/m}^2$ . A prevalence of wasting of 10-19% indicates a poor food security situation and 20-39% a serious situation. Consequences of a low BMI among mothers include<sup>1</sup>:

- Reduced work capacity, which reduces income and has a negative impact on the economy
- Increased morbidity and mortality due to reduced resistance to infection
- Less energy available for other activities, particularly housework, care and leisure activities
- Greater risk of pregnancy complications such as reduced intrauterine growth
- Reduced quality of breastmilk

For more elaborate information about wasting among mothers see HKI/GOI Crisis Bulletin, Issue 4, October 1998.

(Cont'd from p1, col. 2)

wasted was more or less stable in the rural areas, there was a significant increase in Surabaya and a trend for an increase in Jakarta.

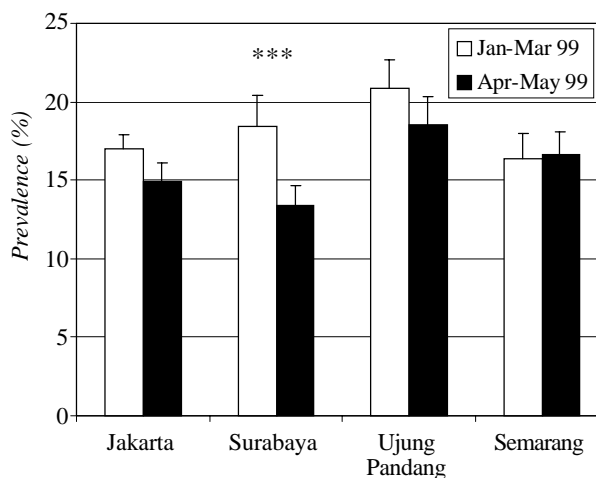
### ACUTE MALNUTRITION AMONG MOTHERS

The prevalence of wasting among (non-pregnant) mothers, as indicated by a body mass index (BMI)  $< 18.5 \text{ kg/m}^2$ , was between 13-21% with little difference between mothers in urban and rural areas (figures 3 and 4). A prevalence of a BMI  $< 18.5 \text{ kg/m}^2$  of 10-20% indicates a poor food security situation.<sup>1</sup>

### YOUNG CHILDREN'S DIETS

While it has previously been reported (see HKI/GOI Crisis Bulletins, Issues 2 and 3, October 1998) that

**Figure 3. Prevalence of wasting (BMI  $< 18.5 \text{ kg/m}^2$ ) among non-pregnant urban mothers in Jan-Mar 1999 and Apr-May 1999.** Bars indicate 95% CI inflated for design effect.



\*\*\* Significant difference between rounds in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

one of the consequences of Indonesia's economic crisis is an enormous increase in the prevalence and severity of micronutrient deficiencies, the very high prevalence of wasting reported above indicates that not only the quality of young children's diets but also its quantity is very poor. There may be two direct causes for the low food intake: an absolute lack of food at household level as well as a low frequency of feeding due to a lack of time available for caring practices.

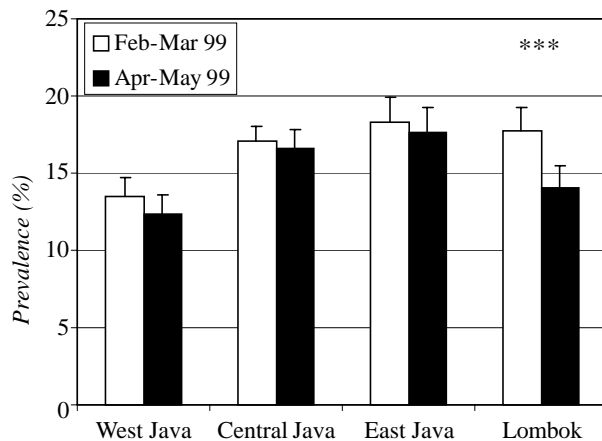
The fact that, among mothers, a slight decrease in the prevalence of wasting was observed between Jan-Mar and Apr-May 1999 (figures 3 and 4) may indicate that mothers' access to food improved slightly. The fact that, among children, no such decrease of wasting was observed indicates that, among children, acute malnutrition is not only related to the availability of food, but also to caring practices. While, according to the finding among mothers, the crisis-induced lack of food at household level seems to have stabilized or even already improved slightly, the absence of a decrease of wasting among children seems to indicate that the extended working hours, which are necessary to boost household income, reduce the time that is available for caring for children and hence limits the number of meals that can be prepared and fed to young children.

### STUNTING AND UNDERWEIGHT

Contrary to the prevalence of wasting, the prevalence of stunting (too low height for age) among children was lowest in Jakarta, Surabaya and West-Java (30-36%) and highest in Lombok and Ujung Pandang (46-57%) (data not shown). Stunting indicates that



**Figure 4. Prevalence of wasting (BMI <18.5 kg/m<sup>2</sup>) among non-pregnant rural mothers in Feb-Mar 1999 and Apr-May 1999. Bars indicate 95% CI inflated for design effect.**



\*\*\* Significant difference between rounds in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

during a longer period particularly the quality of the diet has been poor. A prevalence of stunting between 30-39% is classified as high and of 40% or more as very high.<sup>1</sup> The fact that the prevalence of stunting was lowest in the two largest cities and highest in the outer areas indicates that on a longer term, quality of food has been better in urban areas on Java than in urban and rural areas of the outer islands. The prevalence of wasting found indicates that the urban areas are more affected by an acute shortage of food than the rural areas.

Underweight, or too low weight-for-age (WA), can be the results of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The prevalence of underweight was found to be very high (30-60%) in all areas. The areas that were worst off (>40%) include Ujung Pandang, Lombok, Jakarta and Surabaya. In all areas, the prevalence was slightly, but not significantly, higher in Apr-May 1999 as compared to Jan-Mar 1999.

## CONCLUSION

The shortage of food at household level caused by the crisis was found to be most severe in urban areas. This has resulted in an alarmingly high prevalence of wasting (20-30%) among children in Jakarta, Surabaya and Ujung Pandang. While among mothers, the prevalence of wasting seemed to have decreased slightly, the prevalence of underweight among children seemed to still increase very slowly.

<sup>1</sup> World Health Organization. *Physical status: the use and interpretation of anthropometry*. Report of a WHO expert committee. WHO, Geneva, Switzerland, 1995.

## RECOMMENDATIONS

Based on the findings presented in this bulletin, we recommend that:

### 1. Feeding of infants and young children is improved by:

- promotion of exclusive breastfeeding for the first 4-6 months of life, including the feeding of colostrum (first milk produced by mother after delivery)
- increasing the quantity of food consumed by increasing the feeding frequency and choosing energy-dense (weaning) foods
- increasing the quality of the diet by improving micronutrient intake by including more fortified foods and foods of animal origin in the diet
- micronutrient supplementation, particularly with iron (in addition to vitamin A capsule distribution), to those groups among whom it is difficult to increase the intake of micronutrient-rich foods.

Because many families will not be able to afford commercially available, energy-dense, micronutrient fortified, weaning foods, such foods will have to be subsidized and be made available to specific target groups.

### 2. Food aid and micronutrient supplements are provided to pregnant and breastfeeding women in poor areas.

### 3. Monitoring of the health and nutrition situation in urban and rural areas of Indonesia is continued and expanded in order to:

- monitor the impact of the crisis on different subgroups of the population and in different areas
- identify necessary and appropriate interventions as well as areas and target groups that need them the most
- monitor impact of programs for limiting the consequences of the crisis on health, nutrition and education.

**For information and correspondence, contact:**

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- 
- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
  - Dr. Regina Moench Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id  
Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

*For general enquiries:*  
Federico Graciano  
E-mail: fgrac@cbn.net.id

- Dr. Saskia de Pee  
Nutrition Research Advisor  
E-mail: sdepee@compuserve.com
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@compuserve.com
- Mayang Sari  
Head of Nutrition  
E-mail: nutri1@dnet.net.id  
Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

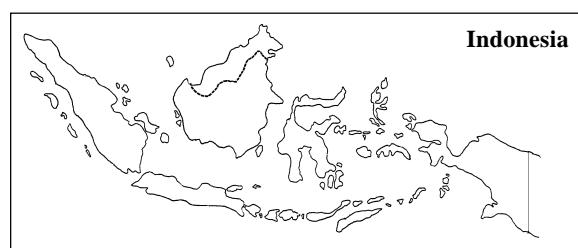
---

© 1999 Helen Keller International

*Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher*

*Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).*

*This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.*



## CRISIS BULLETIN

## Increasing coverage of high-dose vitamin A capsules to prevent crisis-induced re-emergence of vitamin A deficiency

With the transition to the new government in Indonesia, economic recovery looks set to be achieved within 3 to 5 years, according to analysts. However, the crisis has had a significant impact on the population's nutrition and health. This Bulletin reports on the high prevalence of vitamin A deficiency (VAD) found among children living in urban slums and women of reproductive age during the first half of 1999. Although the end of the economic crisis is now in sight, the threat of the re-emergence of VAD is still a problem that urgently needs to be addressed.

The increase of micronutrient deficiencies such as VAD is due to a lower consumption of micronutrient-rich foods, especially animal products and fortified foods, because these are also the most expensive foods that have now become almost unaffordable for those most vulnerable to the crisis.

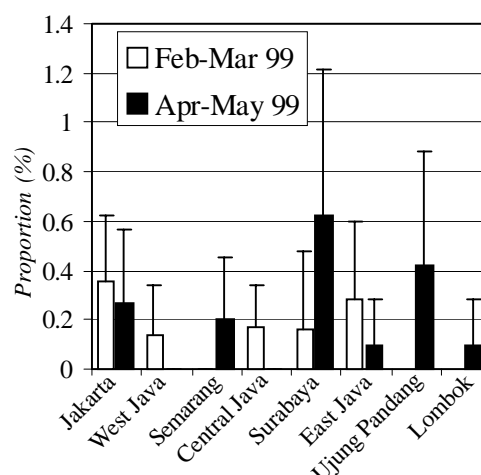
Among children, the increase of VAD has been relatively limited, because high-dose vitamin A capsules are a major source of vitamin A and their distribution has been fairly well maintained during the crisis. The risk of VAD has particularly increased among groups who mainly depend on food sources of vitamin A, such as women of reproductive age and children who live in areas where the coverage of vitamin A capsule distribution has been relatively low.

The HKI/GOI-MOH Nutrition Surveillance System regularly collects data among 30,000-40,000 households in a variety of urban and rural areas of Indonesia to assess health and nutritional status of women and children and monitor health- and crisis-relief- programs. In Jan-

Mar 99 and in Apr-May 99 data were collected on, among other information, VAD, and coverage of vitamin A capsule distribution among underfives and their mothers in four urban slum areas (Jakarta, Surabaya, Ujung Pandang and Semarang) and four rural areas (West Java, Central Java, East Java and Lombok).

(Cont'd on p2, col. 1)

**Figure 1. Prevalence of night blindness in Jan-Mar 1999 and Apr-May 1999 among urban and rural children aged 12-23 mo old.** Bars indicate 95% CI (Confidence Interval) corrected for design effect.



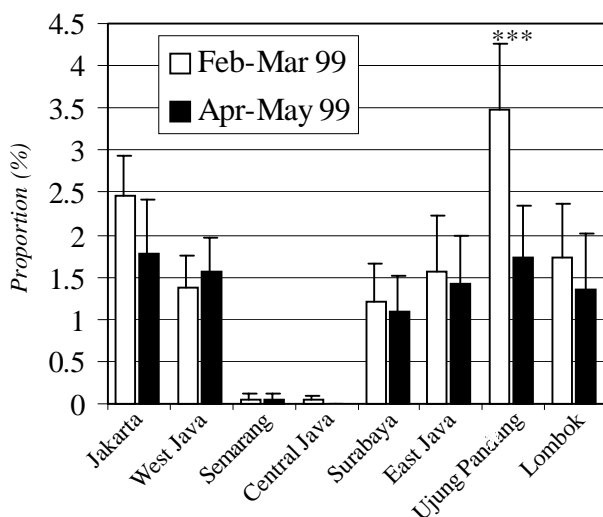
(Cont'd from p1, col. 2)

Figure 1 shows the prevalence of nightblindness, the first clinical sign of VAD, among children aged 12–23 mo old. The prevalence ranged between 0–0.6% and tended to be higher in urban areas (Surabaya, Ujung Pandang and Jakarta) than in rural areas. A comparison of data collected in Central Java before and after the onset of the crisis (reported in HKI/GOI Crisis bulletin, Issue 2, October 1998) revealed an increase of the prevalence of nightblindness from <0.1% to >0.2%. The prevalences reported in this Crisis Bulletin indicate that in the first half of 1999, VAD may still have been increasing among children, but the overall prevalence was still relatively low.

Among non-pregnant women, the prevalence of nightblindness was much higher than among children. It ranged between 1–3.5% in all areas except in Central Java including Semarang (see figure 2). This is nearly as much as the prevalence found in the HKI/GOB national vitamin A survey in rural Bangladesh conducted in 1997, which found 1.7% among non-pregnant non-lactating women and 2.4% among lactating women. Among pregnant women, the prevalence of nightblindness ranged from 0–4% (data not shown because of the small number of cases).

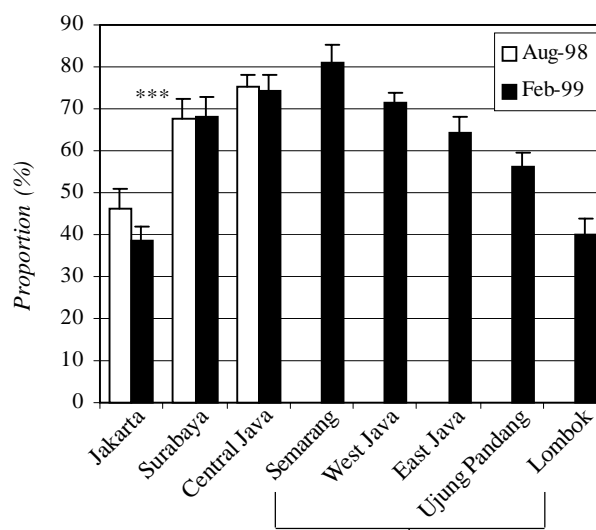
Figure 3 shows the coverage of the distribution of high-dose vitamin A capsules (VAC) among urban and rural children aged 12–59 mo in the two capsule distribution months that preceded the NSS data-collection rounds reported here: August 1998 and February 1999. Until early 1999, VACs were only distributed to children aged 12–59 mo. Among them,

**Figure 2. Prevalence of nightblindness in Jan-Mar 1999 / Apr-May 1999 among non-pregnant urban and rural mothers.** Bars indicate 95% CI corrected for design effect.



\*\*\* Significant difference between rounds in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

**Figure 3. Coverage of high-dose vitamin A capsule distribution in Aug 1998 / Feb 1999 among urban and rural children aged 12–59 mo old.** Bars indicate 95% CI corrected for design effect.



For these five locations, no data were available about VAC receipt in August 1998

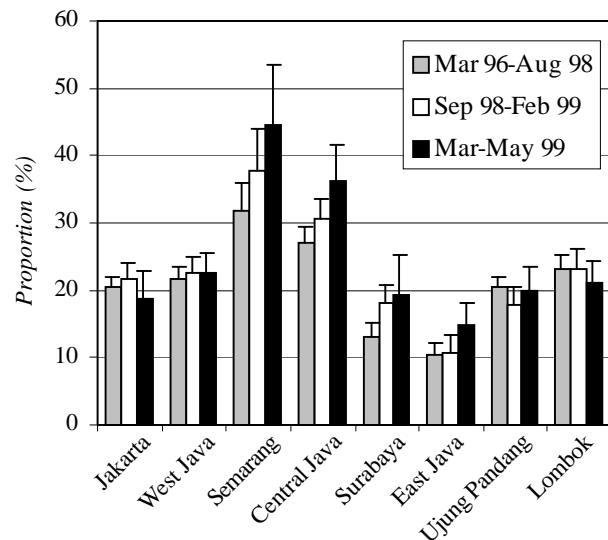
\*\*\* Significant difference between distribution months in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

coverage was well-maintained between Aug 98 and Feb 99, except for a small decrease in Jakarta. In Feb 99, VAC coverage ranged from 64–81% in most areas, but was lower in Ujung Pandang (56%), Lombok (40%) and Jakarta (39%). Among children aged 6–11 mo coverage ranged from 10–35% (data not shown), which is regarded as a spill-over effect of the distribution to older children and as a consequence of inaccuracies of birth dates reported. A large design effect was found for VAC coverage among children aged 12–59 mo old (2.5–8), which indicates that program performance varies widely between villages within a provinces or between slums within a city.

Now, the challenge is to increase coverage of the vitamin A capsule distribution program in the urban areas, particularly in Jakarta, and in some outer islands, including Lombok, to soon achieve good coverage among the new target group of children aged 6–11 mo, and to reduce the large differences of coverage within areas.

The coverage of the distribution of high-dose vitamin A capsules to women within 30 days of delivery, which was introduced in Indonesia in 1991, is increasing in many areas (figure 4). By now, coverage ranges from 15–25% in most urban and rural areas to 35–45% in Central Java and Semarang. The higher coverage in Central Java, including the city of Semarang, is due to a special program to increase coverage of postpartum capsule distribution

**Figure 4. Coverage of high-dose vitamin A capsule distribution to urban and rural women within 30 days of delivery between Mar 1996 and August 1999. Bars indicate 95% CI corrected for design effect.**



in Central Java that started in 1996. Figure 2 shows that this is also the area where the prevalence of nightblindness was found to be the lowest.

While coverage of VAC distribution to women after delivery has increased, its design effect has decreased (between Mar 1996 and Aug 1999 from 6.9 to 2.9 in Central Java and from 2.2 to 1.2 in Jakarta). This indicates that coverage within a province or city has become more similar. Thus, findings with respect to coverage as well to design effect show that program performance has improved. However, because coverage is still relatively low (15-45%), because coverage has not increased everywhere, and because of the observed increase of nightblindness among women of reproductive age, efforts to further increase coverage of the distribution of high-dose vitamin A capsules to women after delivery should be intensified.

## Conclusion

Because of Indonesia's crisis, the quality of the diet has reduced markedly which has had a devastating impact on the prevalence and severity of micronutrient deficiencies. Due to the relatively well-maintained coverage of the vitamin A capsule distribution program among children aged 12-59 mo old, VAD has mainly increased among women of reproductive age and among children in urban areas and outer islands where coverage was lower than in rural Java. Intensification and expansion of the vitamin A capsule program should be of high priority.

## Recommendations

Based on the findings presented above, we recommend that

### 1. Efforts to prevent vitamin A deficiency are intensified by:

- VAC distribution among infants aged 6-11 mo old
- maintaining coverage of VAC distribution among children aged 12-59 mo old and achieve similar coverage across all villages of a province or slums of a city
- increasing coverage of VAC distribution among children aged 12-59 mo old in urban areas and outer islands
- increasing targeted distribution of VAC to high-risk children (see HKI/GOI crisis bulletin, Issue 6, September 1999)
- increasing coverage of VAC distribution to women within 30 days of delivery
- promotion of exclusive breastfeeding for the first 4-6 months of life, including the feeding of colostrum (first milk produced by mother after delivery)
- increasing the micronutrient content of the diet by including more fortified foods and foods of animal origin in the diet

### 2. Monitoring of vitamin A status, vitamin A intake and VAC coverage in urban and rural areas of Indonesia is continued and expanded.

## Dietary vitamin A intake affected by Indonesia's crisis

Recent research has shown that foods of animal origin (eggs, butter, milk and liver) and fortified foods (margarine, commercially available weaning foods, noodles marketed in Indonesia etc) are the best sources of readily available vitamin A. While dark-green leafy vegetables and yellow and orange fruits and vegetables are the most affordable dietary sources of vitamin A, the bioavailability of their vitamin A is much lower. Because Indonesia's crisis has reduced the purchasing power of most of the population, the consumption of relatively luxury foods, such as animal foods and fortified foods, has decreased markedly. This has had led to a large decrease of the intake of micronutrients, including vitamin A.

**For information and correspondence, contact:**

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- 
- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
  - Dr. Regina Moench Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id  
Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

*For general enquiries:*  
Federico Graciano  
E-mail: fgrac@cbn.net.id

- Dr. Saskia de Pee  
Nutrition Research Advisor  
E-mail: sdepee@compuserve.com
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@compuserve.com
- Mayang Sari  
Head of Nutrition  
E-mail: nutri1@dnet.net.id  
Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

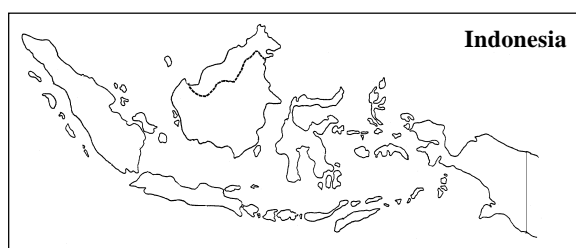
---

© 1999 Helen Keller International

*Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher*

*Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).*

*This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.*



## CRISIS BULLETIN

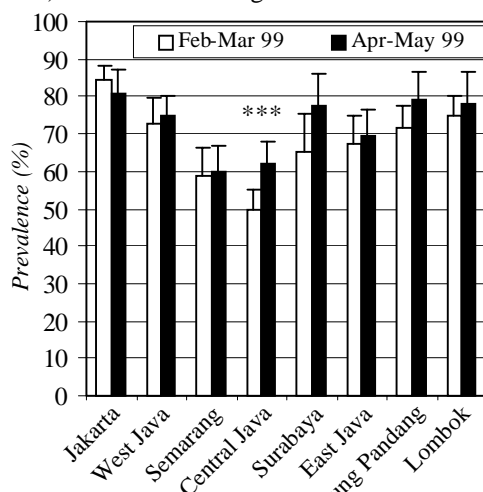
## High prevalence of anemia among young children in urban and rural areas

Indonesia's crisis has increased food prices and reduced purchasing power, which has left the poorest and most vulnerable groups unable to afford micronutrient-rich foods such as animal products. This has resulted in an increased prevalence of micronutrient deficiencies, particularly that of iron and vitamin A. This Bulletin reports on the very high prevalence of anemia found in urban and rural areas, particularly among young children.

Data collected by the HKI/GOI Nutrition Surveillance System (NSS) in Jan – Mar 1999 and Apr – May 1999 show that the prevalence of anemia among underfives, which was approximately 40% in 1995<sup>1</sup>, is now around 50-85%.

Iron deficiency anemia reduces immunity, causes lethargy and limits a child's psychomotor and mental development and can therefore result in reduced intellectual capabilities. The fact that the majority of young children in Indonesia suffers from iron deficiency anemia will have serious consequences for the nation's future development.

**Figure 1. Prevalence of anemia (Hb<110 g/L) in Jan-Mar '99/Apr-May '99 among urban and rural children aged 12-23 mo old. Bars indicate 95% CI (Confidence Interval) corrected for design effect.**



\*\*\* Significant difference between rounds in an area,  $p < 0.001$ , Chi-square test corrected for design effect.

Among non-pregnant women, the prevalence of anemia also increased, from 20-30% in 1995 to 22-47% in early 1999. The prevalence of anemia among pregnant women was found to range from 20-65%. Iron deficiency anemia in women reduces productivity and immunity, and in pregnancy it is an important cause of maternal mortality and leaves the newborn with low iron stores.

## NUTRITION SURVEILLANCE SYSTEM

The HKI/GOI-MOH NSS regularly collects data among 30,000-40,000 households that are selected by multistage cluster sampling, in a variety of urban and rural areas of Indonesia, to assess the health and nutritional status of women and children, and to monitor health- and crisis-relief- programs. In Jan-Mar '99 and in Apr-May '99, hemoglobin concentration was assessed for a subsample of underfives and their mothers in four urban slum areas (Jakarta, Surabaya, Ujung Pandang and Semarang) and four rural areas (West Java, Central Java, East Java and Lombok). A drop of blood was collected from the fingertip and the *HemoCue* device (Angelholm, Sweden) was used to determine its hemoglobin concentration.

1. Ministry of Health, Republic of Indonesia. *Survei kesehatan rumah tangga (SKRT) 1995, survei morbiditas maternal* (Household survey, survey of maternal morbidity). Jakarta: National Institute for Health Research and Development, MOH/RI, 1995.





## Children most vulnerable to malnutrition between 6-24 months of age

Children are most vulnerable to malnutrition between 6-24 months of age. At that time, their nutritional requirements are very high, breastmilk alone cannot meet these requirements anymore, and home-prepared foods that are commonly fed to infants generally have a low content of micronutrients and often the bioavailability of the micronutrients is poor. For example, an infant needs almost as much iron as an adult male, but traditional weaning foods contain less than 20-30% of these needs.

In addition to a low micronutrient content, many weaning foods also have a low energy-density. The latter, often combined with too low a frequency of feeding, results in an inadequate intake of energy and macronutrients. A low frequency of the consumption of foods that already have a low micronutrient content inevitably results in too low an intake of micronutrients.

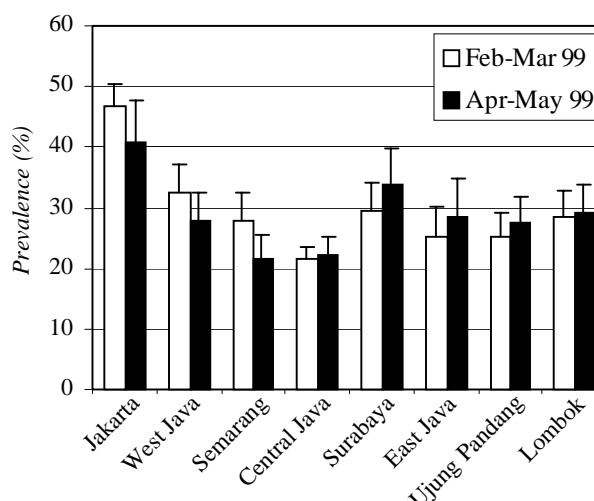
### FINDINGS AND PROGRAMS

The HKI/GOI Crisis Bulletin, Yr. 1, Iss. 7 (November 1999), reported a very high prevalence of wasting among children aged 12-23 mo, especially in urban areas (20-30%), indicating that the absolute amount of food consumed is inadequate. The very high prevalence of anemia indicates that the intake of micronutrients is very much lower than required. Thus, these children urgently need energy-dense, micronutrient-rich, weaning foods.

The Complementary Food Initiative (CFI), which was launched by the Government of Indonesia and is supported by UNICEF, provides such a food to young children aged 6-24 months old, in particular infants aged 6-12 months old. The food, *Vitadele*, is produced locally and distributed to poor villages in 'hardest hit' districts in West, Central and East Java, East Nusa Tenggara, East Timor, and West Nusa Tenggara, where it can be obtained from the Posyandu (integrated health post) at minimal cost. Loans from the International Monetary Fund and the Asian Development Bank for the government's social safety net program have been allocated to the initiative, and the Australian Agency for International Development and the US Agency for International Development are providing funds for further expansion.

HKI is currently evaluating the impact of *Vitadele*

**Figure 2. Prevalence of anemia (Hb<120 g/L) in Feb-Mar '99/Apr-May '99 among non-pregnant urban and rural mothers. Bars indicate 95% CI corrected for design effect.**



### ANEMIA AMONG UNDERFIVES

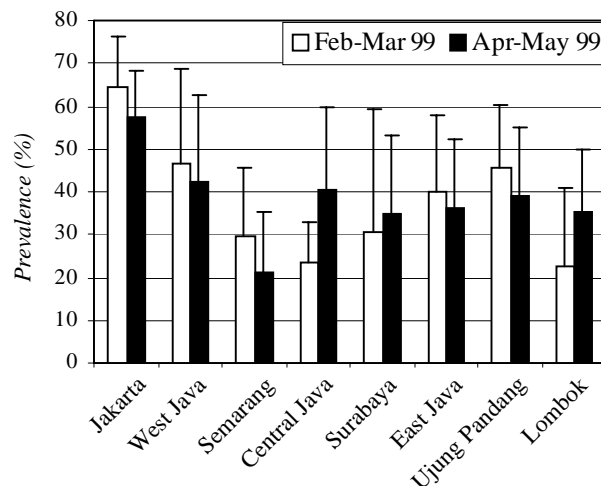
Figure 1 shows the prevalence of anemia among children aged 12-23 mo old. The prevalence ranged between 65-85% in all areas, except in Central Java, including the slums of the city of Semarang, where it was between 50-62%. Also, in all areas, except the slums of Jakarta, the prevalence of anemia seemed to be higher in Apr-May than in Feb-Mar. Data that were collected in Sept-Dec 1999 should reveal whether this trend was sustained.

### ANEMIA AMONG WOMEN

The prevalence of anemia among non-pregnant women ranged between 22-47% (see figure 2), while it was around 20-30% in 1995.<sup>1</sup> The prevalence of anemia was highest in the slum areas of Jakarta and Surabaya (30-47%) and lowest in rural Central Java. However, also in Central Java, as reported in HKI/GOI Crisis Bulletin, Yr. 1, Iss. 3 (Oct. 1998), a comparison of data collected before and after the onset of the crisis (Jun-Aug 96 and Jun-Aug 98) showed that the prevalence of anemia among non-pregnant women was higher after the onset of the crisis (20% compared to 15%). Among pregnant women, who formed a relatively small proportion of the total group of mothers included in the surveillance samples, the prevalence of anemia was also highest in Jakarta, 57-64%, and ranged between 30-45% in most other urban and rural areas (figure 3). While among children the prevalence seemed higher in Apr-May than in Jan-Mar, the prevalence of anemia among women (pregnant as well as non-pregnant) was comparable in these two periods.



**Figure 3. Prevalence of anemia (Hb<110 g/L) in Feb-Mar '99/Apr-May '99 among pregnant urban and rural mothers. Bars indicate 95% CI corrected for de-**



#### INCREASED MICRONUTRIENT DEFICIENCIES

These findings clearly show that Indonesia's crisis has a devastating impact on the prevalence and severity of micronutrient deficiencies (see also HKI/GOI Crisis Bulletins, Yr. 1, Iss. 2, 3 [Oct. 1998] and 8 [Dec. 1999]). NSS data have also shown that the increase of micronutrient deficiencies is mainly due to a lower consumption of micronutrient-rich foods, especially animal foods and fortified foods, because these are also the most expensive foods that have now become very difficult to afford for the majority of the population.

Among children, the increase of the prevalence and severity of vitamin A deficiency is less severe than that of anemia, because the distribution of high-dose vitamin A capsules has been relatively well-maintained (see HKI/GOI Crisis Bulletin, Yr. 1, Iss. 8, Dec. 1999). The very high prevalence of anemia calls for immediate interventions that can add to the existing programs for reducing iron deficiency anemia and indicates the urgent need for information about the prevalence and severity of anemia among various target groups in different areas of Indonesia.

#### CONCLUSION

The prevalence of anemia among young children is very high (50-85%). Also, among women, the prevalence of anemia is considerably higher than before the onset of the crisis. Iron deficiency anemia reduces immunity, productivity, pregnancy outcome, and mental and psychomotor development. The high prevalence of anemia will not only have a devastating impact on the development of the individual, but also on that of the nation. Therefore subsidized micronutrient-rich and energy-dense, weaning foods for young children, and iron supplements for women of reproductive age as well as for particular groups of children are strongly recommended.

#### Recommendations

Based on the findings presented, we recommend that:

##### 1. Feeding of infants and young children is improved by:

- promotion of exclusive breastfeeding for the first 4-6 months of life, including the feeding of colostrum (first breastmilk produced by mother after delivery)
- increasing intake of both micro- and macronutrients by including more fortified foods (such as micronutrient-rich, energy dense, weaning foods) and foods of animal origin in the diet
- increasing feeding frequency
- micronutrient supplementation, particularly with iron, to those groups among whom it is difficult to sufficiently increase micronutrient-intake through the diet.

Because many families will not be able to afford commercially available, energy-dense, micronutrient fortified, weaning foods, such foods will have to be subsidized and be made available to specific target groups.

##### 2. Food aid and micronutrient supplements (particularly iron and vitamin A) are provided to pregnant and breastfeeding women in poor areas.

##### 3. Monitoring of the health and nutrition situation in urban and rural areas of Indonesia is continued and expanded in order to:

- monitor the impact of the crisis on different subgroups of the population and in different areas
- identify necessary and appropriate interventions as well as areas and target groups that need them the most
- monitor the impact of programs for limiting the consequences of the crisis on health, nutrition and education, as is the case with the Complimentary Food Initiative (see box, previous page).

##### 4. New initiatives for limiting the risk of micronutrient deficiencies are well piloted and well tested, in order to allow their adjustment where necessary.

**HELEN KELLER**  
**INTERNATIONAL**

**For information and correspondence, contact:**

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

---

• Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com

• Dr. Regina Moench Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id  
Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

*For general enquiries:*  
Federico Graciano  
E-mail: fgrac@cbn.net.id

• Dr. Saskia de Pee  
Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

• Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@compuserve.com

• Mayang Sari  
Head of Nutrition  
E-mail: nutri1@dnet.net.id  
Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 526-3872 / 252-6059  
Fax (62-21) 525-0529

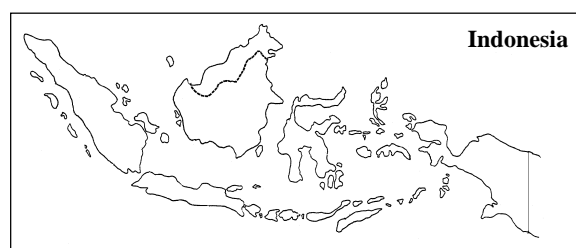
---

© 1999 Helen Keller International

*Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher*

*Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).*

*This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.*



## CRISIS BULLETIN

Nutrition Surveillance:  
How does it work?

At its most recent meeting in April 2000, the United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition (ACC/SCN; see box below) presented the *Fourth Report on the World Nutrition Situation*<sup>1</sup> to key players in the field of nutrition. Those attending the meeting emphasized the importance of the timely collection of comprehensive nutritional data, the rapid processing and dissemination of the findings and their integration in policies and programs at national, regional and global levels.

Over the past 50 years, information systems to monitor and track financial and economic growth have been established. With globalization and rapid economic development throughout the world, information on economic development has become very advanced and up-to-date.

Some of the first systems to monitor nutritional status were also established more than 50 years ago. Advances in computer technology and analytical methods now allow surveillance

systems to become more comprehensive and responsive. Because of our growing understanding of the importance of nutrition for social and economic development, high-tech surveillance systems must be designed and used to provide insight into the complex and rapidly changing situations that countries are undergoing. The moment has arrived to include key nutrition information into development indices and to accept the importance of regular, up-to-date nutrition information, similar to the current economic and financial systems.

**Aims of the ACC/SCN**

The Administrative Committee on Coordination (ACC), which is composed of the heads of the UN Agencies, recommended the establishment of the Sub-Committee on Nutrition (SCN) in 1977 following the World Food Conference.

The aims of the SCN are:

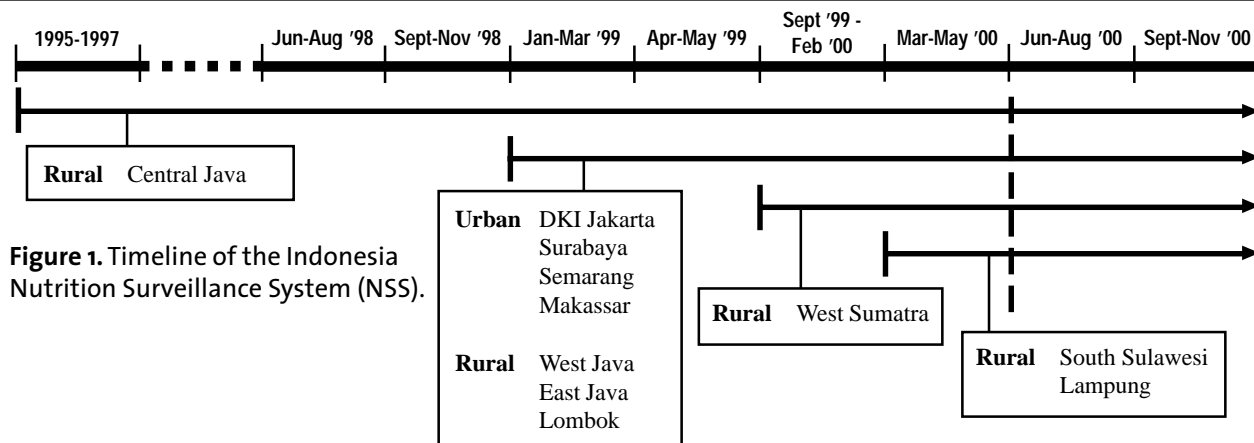
- to raise awareness of and concern for nutrition problems at global, regional and national levels;
- to refine the direction, increase the scale and strengthen the coherence and impact of actions against malnutrition worldwide;
- and to promote cooperation among UN agencies and partner organizations.

For more information, please visit  
[www.unsystem.org/acscn](http://www.unsystem.org/acscn)

With more than 10 years of experience in operating nutrition surveillance in Bangladesh, Helen Keller International (HKI) initiated a nutrition surveillance system in Indonesia in 1995, in collaboration with the Government of Indonesia (GOI). Through these surveillance systems, HKI has stimulated new discussions on how to use surveillance to identify the best indicators to monitor a particular situation. This work has strengthened linkages between different sectors/fields, ranging from agriculture and economics to health and demographics. This report, the first of the HKI Technical Programs Series, describes how the HKI/GOI Nutrition Surveillance System (NSS) works. Future reports will introduce novel techniques, methods and analyses that can be used in nutrition surveillance and health systems. Nutrition surveillance activities were operated

<sup>1</sup> ACC/SCN (2000). *Fourth Report on the World Nutrition Situation*. Geneva: ACC/SCN in collaboration with International Food Policy Research Institute (IFPRI).





in Central Java from 1995 to 1997. The NSS restarted in Central Java in June 1998 and has gradually expanded to 7 other Indonesian provinces, covering both rural and urban areas, over the past two years (Figure 1, above). Data are currently being collected from urban slums in four major cities and seven rural provinces throughout Indonesia (Figure 2, below). Preparations have also begun to further expand the surveillance to two more provinces by late 2000. The NSS sites were selected based on the ongoing work of HKI and the United Nations Children's Fund (UNICEF) and in consultation with the Government of Indonesia and other organizations working in nutrition.

Different sampling frames have been applied for the rural and urban areas.<sup>2</sup> In the rural areas, a multi-stage cluster sampling design is used to obtain the random sample (see Figure 4, p3). For instance, Central Java consists of six ecological zones. From each zone, 30 villages are selected by probability proportional to size (PPS) sampling techniques. Each village provides a list of households with at least one child younger than five years of age. From this list, 40 households with at least one child less than five years of age are selected by fixed interval systematic sampling (SS). The total sample size for the NSS rural areas is 33,600 households.

The urban sample includes only households residing in a

slum or shantytown. Two slightly different sampling frames are used in the urban slum sites. In Jakarta and Surabaya, '*kelurahan*' (villages) with slums are listed and 40 are selected using simple random sampling (SRS) techniques. Then, within each *kelurahan*, two to three '*Rukun Warga*' (RW; sub-villages) with slums are selected, for a total of 80-120 RWs, or sample clusters, per urban area. In Semarang and Makassar, the *kelurahan* strata is not used and 80 RWs with slum populations are randomly selected from each of the two cities. Within each RW, 30 households with at least one child younger than five years old residing in the slum are then randomly selected to participate in the survey round. The total sample size for the four urban slums is 10,800 households.

Information is collected quarterly in all sites (four rounds per year). The survey teams interview the households to obtain information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity and nutritional knowledge. Weight, height (or length, for children younger than 24 months) and mid-upperarm

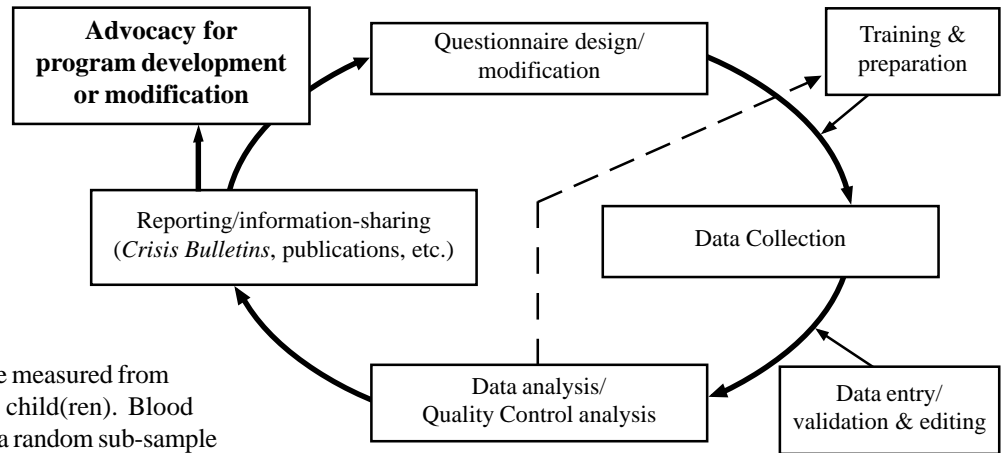
<sup>2</sup> Kirkwood B. Essentials of Medical Statistics. Oxford Blackwell Scientific Publications, 1988.

**Figure 2. Map of the HKI/GOI NSS project sites.**

Current urban slum sites – Jakarta, Surabaya, Semarang and Makassar – are located in DKI Jakarta, East Java, Central Java and South Sulawesi, respectively. These provinces, except DKI Jakarta, also include current rural sites monitored by the NSS. Other current rural project sites are the provinces of West Sumatra, Lampung, West Java and West Nusa Tenggara. The provinces of South Kalimantan and East Nusa Tenggara will be included as rural surveillance sites in late 2000.



**Figure 3.** The nutrition surveillance process



circumference (MUAC) are measured from the mother and underfive child(ren). Blood samples are collected from a random sub-sample of children and mothers by finger prick to measure hemoglobin concentration using the *HemoCue* device (Angelholm, Sweden).

HKI employs several mechanisms to ensure that the data are collected properly. The survey teams are carefully selected and trained and a field supervisor regularly supervises their work. In addition, a quality-control (QC) team makes random, unannounced visits on a sub-sample of the households that were already visited by a regular field worker. The data collected by the quality-control team are compared with those of the field worker, and the differences in observations are discussed with the fieldworkers before they embark on a new round of data-collection.

Data entry is conducted using SPSS Data Entry Builder for Windows version 1.0. During data entry, validity of values are checked automatically and, after data entry, further checks on the data entered are performed. Data analysis is conducted using SPSS 7.5 for Windows.

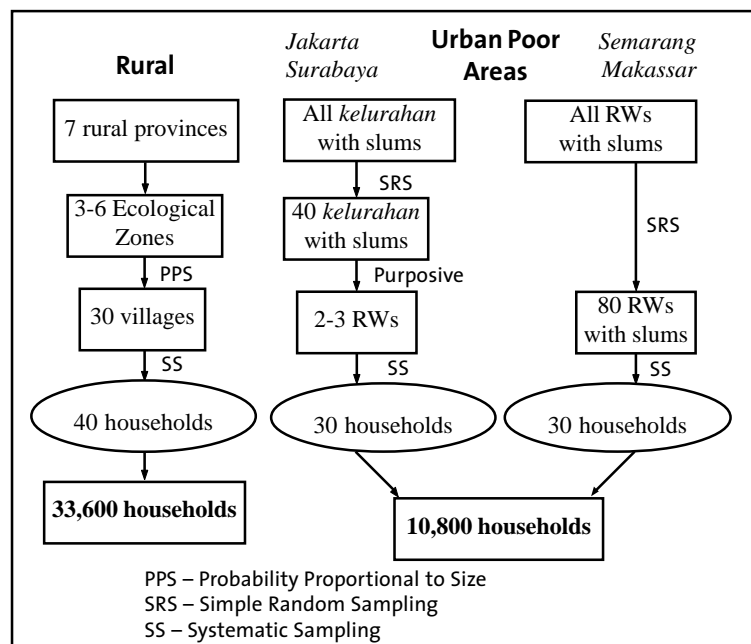
A special report (*Crisis Bulletin*) is prepared every month with the most up-to-date information on the nutrition/health situation. The information is shared with both local and international audiences to assist government and other organizations to develop or revise nutrition-related programs.

Through its work with government and NGO counterparts in Bangladesh and Indonesia, HKI/Asia-Pacific has become a leader in operating and using nutrition surveillance systems. In Indonesia, the NSS has been used locally and internationally to monitor the health and nutritional impact of the economic crisis. The NSS works with the DAI Food Policy Support Group and the International Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) initiative and provides data to the World Health Organization's (WHO) global anthropometric database. The NSS is also now well positioned to serve as the framework to monitor a variety of development programs in Indonesia and other Asia-Pacific countries.

### Conclusions and Recommendations

- The HKI nutrition surveillance systems have been useful tools to monitor nutritional status over time, to evaluate the nutrition and health impact of national or sub-national events such as economic crises and natural disasters, and to monitor development programs and conduct special surveys.
- Using the advanced technology that is available, surveillance systems must be comprehensive and innovative in the future in order to monitor the complex and rapidly changing situations occurring in the world.
- The NSS can be used as a framework to monitor development programs and to provide insight into other sectors of development.

**Figure 4.** Sampling framework for the HKI/GOI NSS.





**Helen Keller**  
WORLDWIDE  
Helen Keller International  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- 
- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
  - Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgrac@cbn.net.id

- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com
- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@bdonline.com
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@compuserve.com
- Mayang Sari  
Head of Nutrition  
E-mail: nutri1@dnet.net.id

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

---

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

## Decreasing prevalence of anemia among urban children: Does it indicate increased access to micronutrient-rich foods?

Indonesia's economic crisis, which started in July 1997, caused an increase in the prevalence and severity of micronutrient deficiencies such as iron and vitamin A deficiency. This increase was mainly due to the fact that a large proportion of the population could no longer afford to purchase micronutrient-rich foods such as animal products and fortified foods. The prevalence of anemia among young children (aged 12-23 months), which is a very sensitive indicator for changes in the quality of the diet, has decreased in urban slum areas between January 1999 and January 2000, from 55-85% to 45-70%. While this prevalence is still very high, it indicates that the nutrition situation is improving.

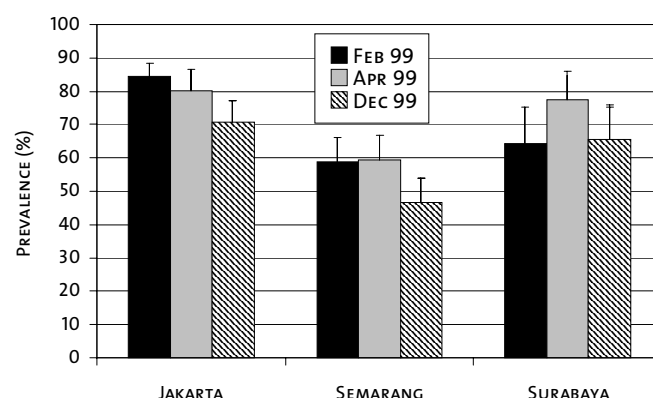
For nearly three years, Indonesia has been battling an economic crisis. The crisis reduced household real income and, subsequently, food and non-food consumption. The HKI/GOI Nutrition Surveillance System (NSS) has been monitoring the impact of the crisis in rural Indonesia throughout this period. Data collection was initiated in urban slums of Jakarta, Semarang and Surabaya in early 1999 (see Crisis Bulletin Yr 2, Iss 2 for

information on sampling and data collection methods).

The data on anemia from these urban slum areas in Jan-Mar 1999, Apr-May 1999 and Nov 1999-Feb 2000 are shown in Figures 1 and 2. Figure 1 shows anemia prevalence among children aged 12-23 months. Between Jan-Mar and Apr-May 1999, the prevalence had decreased in Jakarta, remained the same in Semarang,

and increased in Surabaya. However, between Apr-May 1999 and Nov 1999-Feb 2000, it had decreased in all areas from 60-80% to 45-70%. A similar trend was observed among non-pregnant mothers (shown in Figure 2), except in Semarang, where the prevalence of anemia in Nov 1999-Feb 2000 was similar to that observed in Jan-Mar 1999.

**Figure 1.** Trends in the prevalence of anemia (Hb < 11.0 g/dL) among children aged 12-23 months in urban slum areas.<sup>1,2,3</sup>



<sup>1</sup> As assessed by *HemoCue* in blood obtained from fingertip

<sup>2</sup> Bars indicate 95% CI (Confidence Interval) corrected for design effect.

<sup>3</sup> Midpoints for the data collection rounds have been plotted: Feb 99 – Jan-Mar 99; Apr 99 – Apr-May 99; Dec 99 – Oct 99-Feb 00.



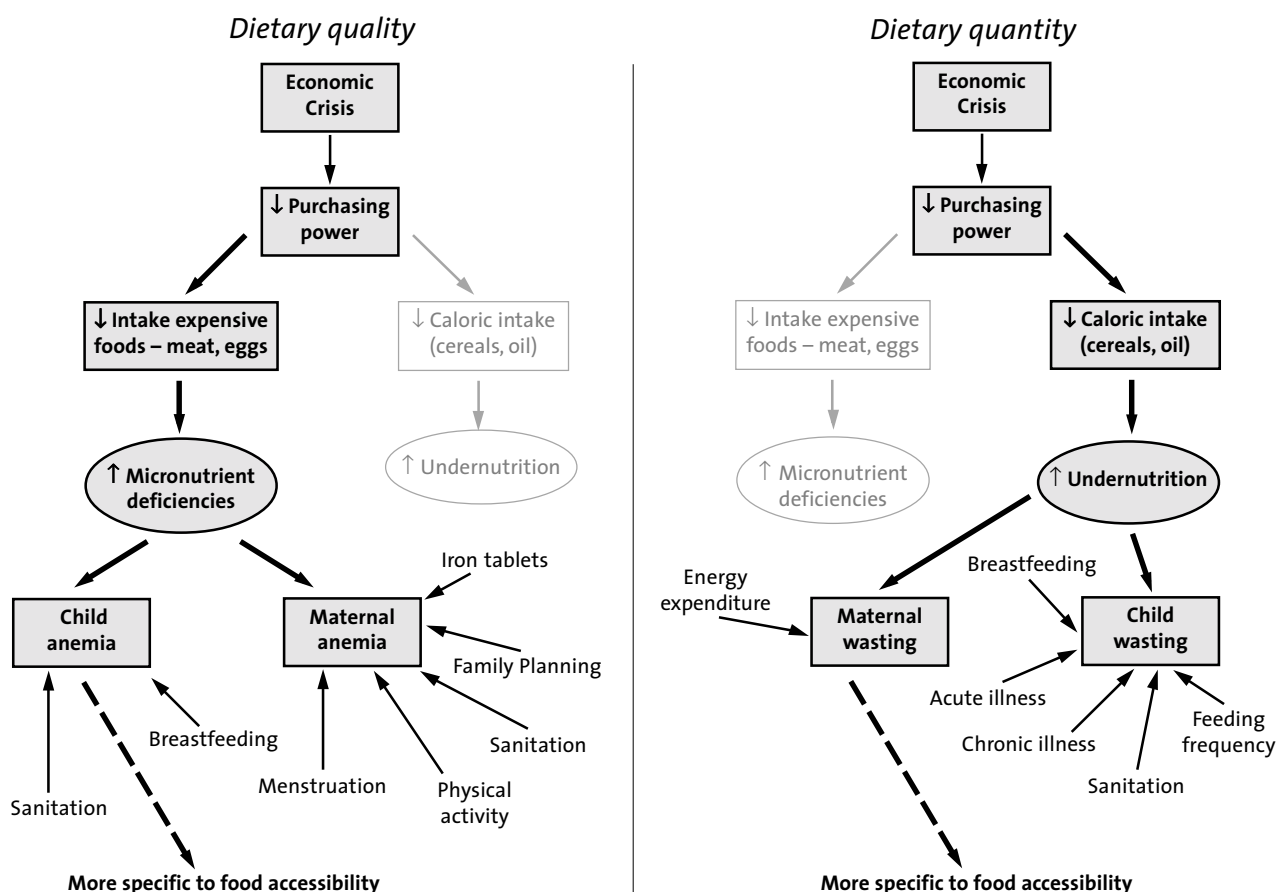
# Box 1. Childhood anemia and maternal BMI are sensitive indicators for assessing the impact of accessibility to food

During the economic crisis, the rupiah was dramatically devalued and prices of a great number of consumer goods increased. These events reduced the purchasing power of households in Indonesia. For many households, this resulted in reduced overall food consumption. As shown in many studies, changes in household income and purchasing power influence the share of total food expenditure allocated to more expensive foods, such as meat, eggs, fruit and commercial foods. We hypothesized that both quality and quantity of the diet might be negatively affected by the crisis. In line with the UNICEF conceptual model for malnutrition (Figure 3), a decline in dietary intake would likely precipitate increases in malnutrition. Similarly, if food intake begins to improve (through economic improvement and/or programs such as the social safety net program that are implemented to limit the impact of the crisis on the poorest in the population), the nutritional status would be expected to improve. Anemia is increasingly recognized as a good indicator of micronutrient deficiency. Low weight-for-height (measured as body mass index, or BMI, in adults) is a responsive indicator to acute changes in the immediate causes of malnutrition. The HKI/GOI Nutrition Surveillance System (NSS) has collected data on anemia prevalence among and taken weight and height measurements from women and underfive children since it was first established in 1995. Based on the surveillance of the nutritional situation since the crisis (both the rapid deterioration and the gradual improvements over the past year), evidence is growing to support the use and interpretation of data on childhood anemia and maternal BMI as sensitive, responsive indicators to monitor the nutrition situation in times of crisis.

In the Indonesian situation, the most important immediate cause of anemia (an outcome indicator of undernutrition) is inadequate intake of iron. Disease is much less important as an immediate cause, because the most important diseases that cause anemia – hookworm infestation and malaria – both have a low prevalence in most areas of Indonesia.

For children, as opposed to mothers, the main source of iron is the diet. The best sources of iron in the diet are animal foods and fortified foods, not only because of a relatively high content of iron but also because of the relatively high bioavailability of their iron. Thus, because the economic crisis reduces purchasing power, which will particularly impact on the consumption of relatively luxurious foods such as animal products and industrially-produced fortified foods, one of the first nutritional consequences of the crisis will be an increase in the prevalence of anemia among children.

For mothers, there is another important source of iron in addition to the diet – the iron supplements that are provided, as prescribed by the government, during pregnancy. Due to the contribution of supplements to the iron intake of pregnant women, iron status among mothers may not only be affected by changes in dietary quality, but could also reflect the performance of the health care system. During Indonesia's crisis, the health care services were relatively well maintained. Therefore, anemia prevalence is not exclusively an indicator of the nutritional impact of the crisis among women, which it is among children, whose iron status depends mainly on dietary intake.



Adapted from: Bendich A, Deckelbaum RJ (ed.). *Preventive Nutrition Vol II*. Humana Press, New Jersey, 2000. In press.



Among mothers, the prevalence of anemia is now almost the same as it was before the onset of the crisis when it ranged from 20-30%.<sup>1</sup> Among young children however, the prevalence is still considerably higher than the prevalence among underfives of 40% that was documented before the onset of the crisis.<sup>1</sup>

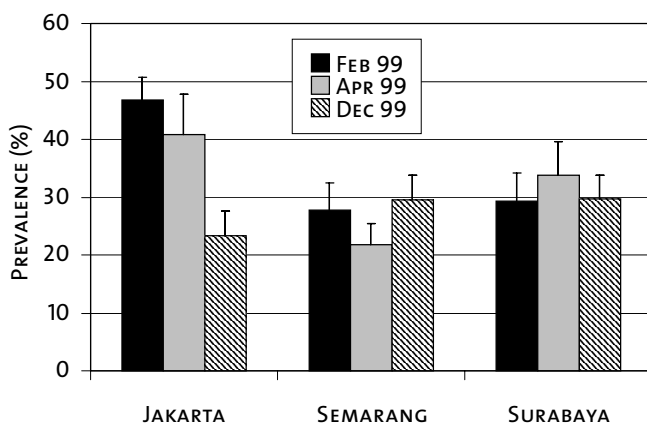
There is considerable evidence that anemia has negative consequences on social and economic development. Iron deficiency anemia reduces immunity, causes lethargy and limits a child's psychomotor and mental development and can therefore result in reduced intellectual capabilities. In women, iron deficiency anemia reduces productivity and immunity, and in pregnancy it is an important cause of maternal mortality and leaves the newborn with low iron stores. The fact that a very large proportion of Indonesia's population suffers from anemia, which is mainly due to iron deficiency, has serious consequences for the nation, at present as well as in the future.

Based on the experience in Indonesia since the crisis, global recognition to use child anemia to monitor the nutritional consequences of the crisis is growing. The 4th Report on the World Nutrition Situation (Jan 2000) by the United Nations Administrative Committee on Coordination, Sub-Committee on Nutrition (ACC/SCN) reports that 'Indicators of diet diversity and micronutrient status should be considered leading or early indicators for monitoring

<sup>1</sup> Ministry of Health, Republic of Indonesia. *Survei kesehatan rumah tangga (SKRT) 1995, survei morbiditas maternal* (Household survey, survey of maternal morbidity). Jakarta: National Institute for Health Research and Development, MOH/RI, 1995.

<sup>2</sup> ACC/SCN (2000). *Fourth Report on the World Nutrition Situation*. Geneva: ACC/SCN in collaboration with International Food Policy Research Institute (IFPRI)

**Figure 2.** Trends in the prevalence of anemia (Hb < 12.0 g/dl) among non-pregnant mothers<sup>1,2,3</sup>



<sup>1</sup> As assessed by HemoCue in blood obtained from fingertip.

<sup>2</sup> Bars indicate 95% CI (Confidence Interval) corrected for design effect.

<sup>3</sup> Midpoints for the data collection rounds have been plotted: Feb 99 – Jan-Mar 99; Apr 99 – Apr-May 99; Dec 99 – Oct 99-Feb 00.

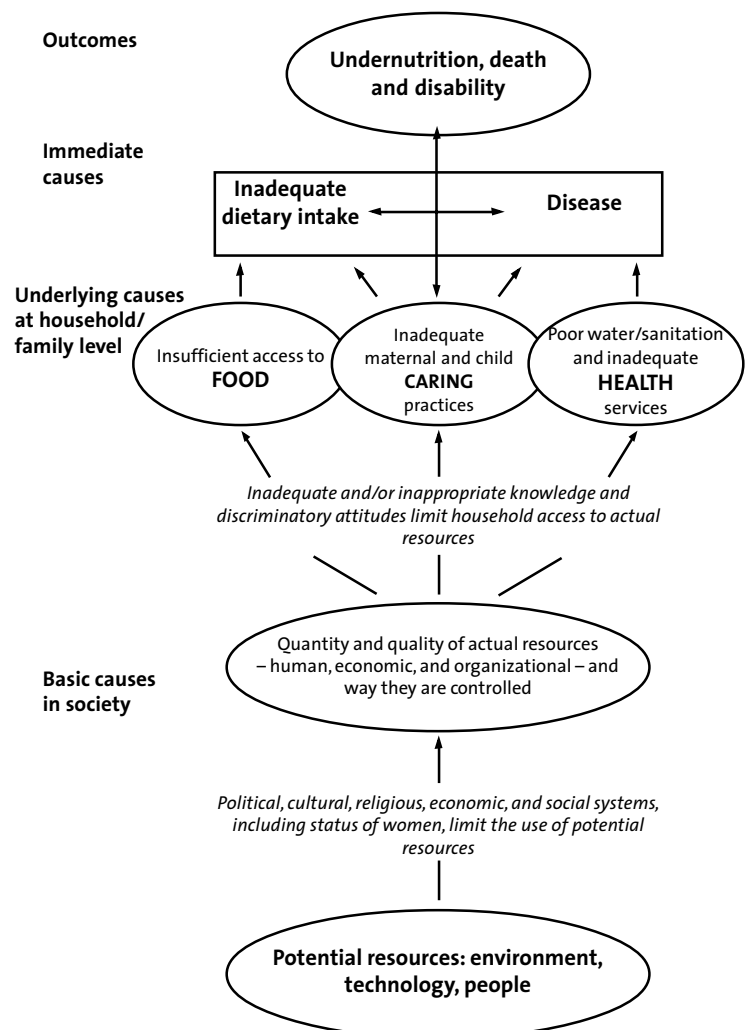
the impact of crises on nutrition status.<sup>2</sup> The data presented in this Crisis Bulletin provide evidence that anemia among young children is indeed a very good indicator for monitoring the impact of a crisis on the nutrition situation.

### Recommendations

Because of the high prevalence of anemia found, we recommend that:

- Subsidized, micronutrient-rich and energy-dense, weaning foods are provided to young children.
- Iron and/or multimicronutrient supplements are made available for pregnant and breastfeeding women in poor areas, as well as for particular groups of children.
- Monitoring of the prevalence of anemia among young children should continue because it is one of the best indicators for measuring the impact of the crisis on the nutrition situation, as well as for measuring recovery from the consequences of the economic crisis.

**Figure 3.** UNICEF conceptual framework outlining the causes of undernutrition.



Source: UNICEF. *The State of the World's Children 1998*. Oxford: Oxford University Press, 1998.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@compuserve.com

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

Decreasing prevalence of maternal wasting:  
does it indicate increased access to food?

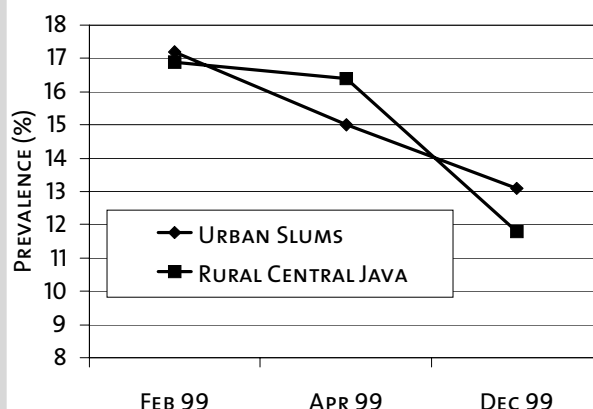
As a result of the economic crisis, malnutrition among women of reproductive age increased significantly in rural Central Java. The crisis reduced household purchasing power and as a result, poor households purchased and consumed food that was inadequate in both calories and micronutrients. Encouragingly, a steady improvement in maternal wasting has been observed from January to December 1999 in the urban slums where the HKI/GOI Nutrition Surveillance System collects data. Maternal BMI appears to be sensitive to changes in food access and is a good indicator to monitor the impact and the recovery of the economic crisis.

The prevalence of wasting (body mass index below 18.5 kg/m<sup>2</sup>) among women of reproductive age increased significantly after the onset of the economic crisis in rural Central Java.<sup>1</sup> This change was almost equivalent to the improvements in Southeast Asia that had been achieved over the previous 30 years. Malnutrition among women has serious negative consequences for social and economic development. It can reduce work capacity, increase morbidity and mortality, lower the energy for household and caring activities, reduce the quality of breastmilk and increase pregnancy complications.

Based on the important findings from rural Central Java, women and children's nutritional status has been monitored in slum areas of four cities over the past year as part of the expansion of the NSS.<sup>2</sup> This report presents the findings on wasting (low body mass index and low weight-for-height) among women and children from data collected in Jakarta, Semarang and Surabaya from February to December 1999.

As shown in Figure 1, the prevalence of maternal malnutrition has declined in both rural Central Java and in selected urban slum areas over the past year. The prevalence of maternal malnutrition was

**Figure 1.** Trends in low body mass index (BMI < 18.5 kg/m<sup>2</sup>) among non-pregnant women in rural Central Java and urban slums in three cities<sup>1,2</sup>



<sup>1</sup> Midpoints for the data collection rounds have been plotted: Feb 99 – Jan-Mar 99; Apr 99 – Apr-May 99; Dec 99 – Oct 99-Feb 00.

<sup>2</sup> Differences in prevalence between Feb 99 and Dec 99 are statistically significant for both urban and rural samples (Chi-sq test,  $p < 0.001$ )

similar in rural Central Java and the three urban slums in Feb. 1999, however, the pattern of improvement has been slightly different in rural areas compared to the urban slums. Malnutrition has declined steadily in the urban slums between February and December 1999. In Central Java, there was little decline in the prevalence of low BMI between February 1999

<sup>1</sup> Helen Keller International/Government of Indonesia. *Have 30 years of nutritional improvement in Southeast Asia disappeared in one year of the crisis?* Ind Cris Bul Yr 1, Iss 4, Oct 1998.

<sup>2</sup> Helen Keller International/Government of Indonesia. *Nutrition Surveillance – How does it work?* Ind Cris Bul Yr 2, Iss 2, Feb 2000.

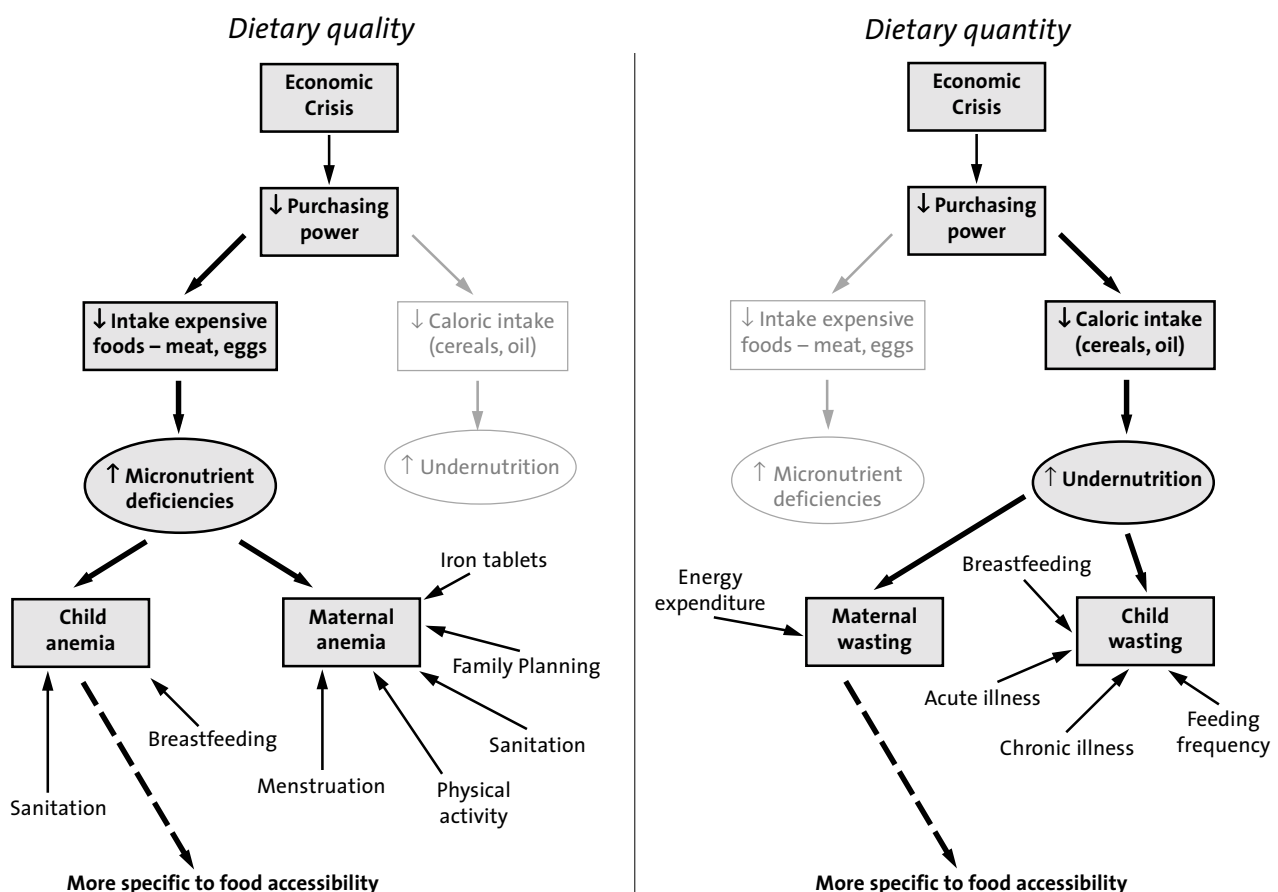
# **Box 1. Maternal BMI and childhood anemia are sensitive indicators for assessing the impact of accessibility of food**

The diagrams below show how the economic crisis in Indonesia has affected both the quality and quantity of household food consumption. When purchasing power is reduced because of the economic crisis, the household will purchase less food. The first consequence of this will be a reduced consumption of relatively luxurious foods, such as animal products and industrially-produced fortified foods, which will increase the prevalence and severity of micronutrient deficiencies. And secondly, the quantity of food available at household level will be reduced. The UNICEF framework (Figure 4) shows how diet and other factors influence malnutrition among women and children. In the March 2000 *Crisis Bulletin*, we reported how childhood anemia appears to be a sensitive, responsive indicator to monitor both decreases and improvements in dietary quality. In this report we share information on changes in dietary quantity.

For mothers, the most important immediate cause of a loss in body weight is reduced food intake. Among mothers, as opposed to young children, disease is much less important as an immediate cause of a loss in bodyweight, because the prevalence of disease is relatively low and generally it does not cause a substantial loss of weight. When there is less food available for the household, the mother will first

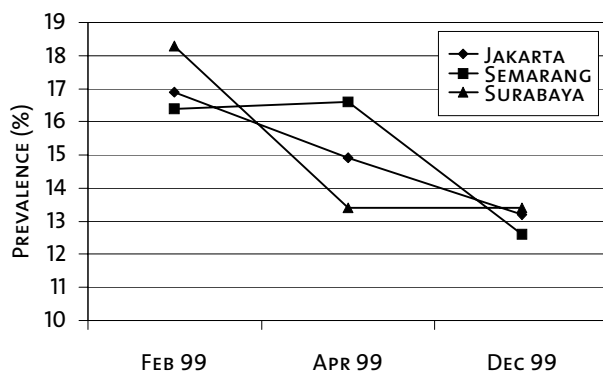
reduce her own food intake before that of her children and her husband. Therefore, she will be the first to lose weight when the household's access to food is reduced. Also, when the household's access to food increases again due to increased purchasing power as a consequence of economic recovery and/or due to crisis relief programs, her bodyweight will increase again.

Thus, because maternal bodyweight is mainly affected by food intake and because mothers will reduce their own food intake before that of other household members, a change of the prevalence of maternal wasting is an early and sensitive indicator for a reduction, but also for an increase, of the access to food at household level. The statement above that wasting among children is not only affected by food intake but also by disease is supported by Figures 3a and 3b. Figure 3a shows changes of the prevalence of wasting among children aged 12-23 months and Figure 3b, for children aged 24-35 months. The pattern of the older children is much more similar to that observed among mothers than that of the younger children, because younger children suffer more from illness than older children and the relative impact of illness on their bodyweight is also larger. Thus, while among mothers and older children, food intake is the main factor associated with weight changes, among younger children, illness is also an important factor.



Adapted from: Bendich A, Deckelbaum RJ (ed.). *Preventive Nutrition Vol II*. Humana Press, New Jersey, 2000. In press.

**Figure 2.** Trends in low body mass index (BMI < 18.5 kg/m<sup>2</sup>) among non-pregnant women in Jakarta, Semarang and Surabaya<sup>1</sup>

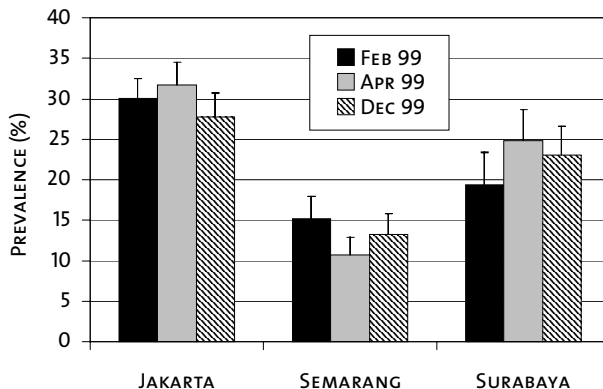


<sup>1</sup> Differences in prevalence between Feb 99 and Dec 99 are statistically significant for all three urban slums (Chi-sq test,  $p < 0.001$ ).

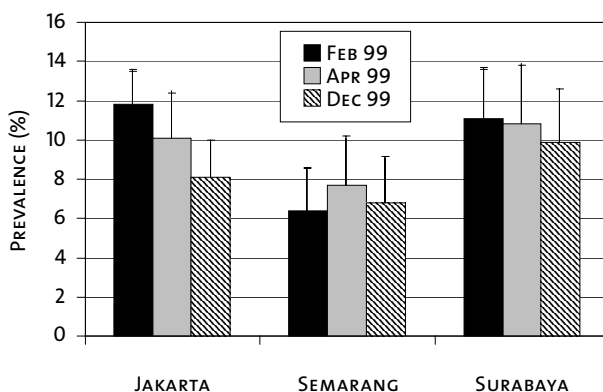
and April 1999, but low BMI declined from 16.5% in April 1999 to 11.7% in December 1999.

While BMI is declining overall in the urban slums since February 1999, some differences in the magnitude and pattern of decline was observed between the three slums where NSS data is collected (Figure 2). The prevalence of malnutrition was slightly higher in Surabaya in February 1999, but declined in April 1999 and remained steady at 13.5% in December 1999. The prevalence of low BMI has declined steadily in Jakarta over the past year

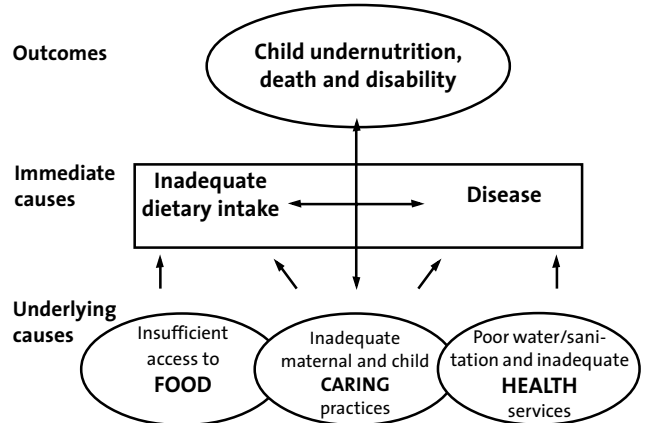
**Figure 3A.** Trends in wasting (weight-for-height < -2 SDs) among children 12-23 months of age in Jakarta, Semarang and Surabaya



**Figure 3B.** Trends in wasting (weight-for-height < -2 SDs) among children 24-35 months of age in Jakarta, Semarang and Surabaya



**Figure 4.** UNICEF conceptual framework for the causes of malnutrition



Source: UNICEF. The State of the World's Children 1998. Oxford: Oxford University Press, 1998.

(decline from 17% to 12.5%). In Semarang, the prevalence of low BMI only started to decline between April 1999 and December 1999. However, the prevalence of low BMI was similar in Jakarta, Semarang and Surabaya in December 1999.

The rates of wasting (weight for height z-score < -2 SDs) among children have also changed over the past year. While the pattern is less clear among children 12-23 months of age (Figure 3a) because of the different factors that influence nutrition in these ages, the trends among children aged 24-35 months are more similar to the patterns among women (Figures 2 and 3b). The prevalence of wasting declined steadily in Jakarta and Surabaya among children aged 24-35 months. Rates of wasting among both age groups are lower in Semarang than Jakarta or Surabaya, but there was little reduction over the past year. Malnutrition in children can impair both physical and cognitive development, therefore the steady decline observed in Jakarta is encouraging. However, the prevalence of wasting is still very high, especially among children aged 12-23 months.

## Recommendations

- Maternal BMI appears to be a useful indicator for an impact of the economic crisis as well as recovery and/or relief programs and the NSS should continue to monitor maternal and child nutritional status.
- The information that will be generated should be used to evaluate ongoing programs and to plan future programs, and the data can provide useful insight into the use of anthropometric indicators to monitor crises and development/relief programs.



**Helen Keller International**

A division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

## Vitamin A Capsules: Red and Blue

### What's the difference?

**In 1999, children 6-11 months of age were added as a new target group for routine vitamin A supplementation in Indonesia. These younger children should receive 100,000 IU of vitamin A, half the dosage recommended for older children. The reason for expanding the target group is to promote good nutritional status and prevent morbidity and mortality among children at an earlier age. To meet this need, efforts are being made to distribute 100,000 IU (blue-colored) capsules around the country.**

At the end of 1999, an updated set of national policy guidelines for the acceleration of vitamin A supplementation program activities was published in Indonesia. That publication provides a concise reference for policy makers, program managers and health workers across the country about the consequences of vitamin A deficiency, why acceleration programs should be conducted, who the target groups are, how the approach would be carried out, and what dosages of vitamin A should be administered.

Currently, two different types of vitamin A capsules are being used for routine supplementation activities in Indonesia: red 200,000 IU capsules and blue 100,000 IU capsules. However, some policy makers, program managers and health service providers may still have questions on why the 100,000 IU (blue) vitamin A capsules are now being distributed and how they should be used.

This bulletin (published in English and Bahasa Indonesia) provides a brief outline of the vitamin A supplementation program activities for preschool children and describes the different types and sources of vitamin A capsules that have been used to support these programs from the 1970s to the present.

#### **History of vitamin A supplementation for preschool children in Indonesia**

In the early 1970s, a pilot project to distribute 200,000 IU vitamin A capsules to approximately 100,000 children aged 1-5 years was launched in 20 districts of Java as a collaborative effort by the Government of Indonesia (GOI) and Helen Keller International (HKI). That project represents one of the earliest phases of widespread community-based supplementation activities in Indonesia. Based on the success of that initial pilot program, the GOI decided to expand vitamin A distribution activities to reach over 7 million children. At that time, the United Nations Children's Fund (UNICEF) distributed 200,000 IU vitamin A capsules to support the program activities. The early vitamin A capsules were orange in color because the vitamin A-containing oil was encased in a clear gelatin capsule.

In the past 30 years, numerous changes have taken place in both the nationwide vitamin A supplementation program and the system for vitamin A capsule production and procurement. The scope



and intensity of program activities have alternatively expanded and contracted in response to the nutritional situation in the country, new target groups for vitamin A supplementation have been added, the national pharmaceutical industry in Indonesia began to produce capsules for use in the routine vitamin A supplementation program, and in the mid-1990s, the GOI became one of the first governments in the world to fully assume the costs of procuring capsules for a national vitamin A supplementation program for preschool children.

### Vitamin A capsule production and procurement

Since the 1970s, several changes have taken place in the system used to procure vitamin A capsules needed for the routine supplementation program. Up until the mid-1990s, the capsules were procured primarily with the financial and logistical support of UNICEF. Initially, children 1-5 years of age were the only target group for routine supplementation and the 200,000 IU vitamin A capsules were the only type of capsules required.

With the help of UNICEF, similar program activities were launched in the 1980s in other countries where vitamin A deficiency threatened the health and survival of preschool children. At the time, research findings were indicating that children even younger than 1 year of age would also benefit from routine vitamin A supplementation and children 6-11 months of age were officially included as a target group for supplementation in some countries. The recommended dosage for this younger age group is 100,000 IU of vitamin A, half the dosage recommended for older children. To meet the need for vitamin A capsules for these younger children, pharmaceutical companies began producing capsules containing 100,000 IU of vitamin A.

In the 1990s, pharmaceutical companies around the world began to adopt a standardized color-coding scheme for the production of vitamin A capsules containing different dosages of vitamin A. In many countries, the internal contents of vitamin A capsules can now be identified by their external color as follows: 200,000 IU (red) and 100,000 IU (blue).

The pharmaceutical industry in Indonesia used the same color-coding scheme when they began producing vitamin A capsules for the national supplementation program in the 1990s. As a result, supply managers and health service providers in the district health offices, *Puskesmas* (community health centers) and *Posyandu* (village health posts) can

**Figure 1.** Promotional brochure about the new target group of children aged 6-11 months and the 100,000 IU blue vitamin A capsules



clearly distinguish between the stocks of 100,000 IU capsules intended for children 6-11 months old and the stocks of 200,000 IU capsules for children 1-5 years old.

### Economic crisis in Indonesia

The Asian economic crisis that began in 1997 caused a decline in household purchasing power and decreased families' ability to buy relatively expensive foods such as eggs and meat – foods that are particularly rich in vitamin A. Data collected by the GOI/HKI Nutrition Surveillance System (NSS) documented an increase in the prevalence of night blindness and concerns began to rise about the re-emergence of vitamin A deficiency in some areas of the country (see Crisis Bulletin Yr 1, Iss 2, Oct 1998). Renewed efforts were called for to support vitamin A supplementation activities for children at highest risk – including children living in the urban slum areas where vitamin A capsule coverage rates were low and children 6-11 months old.



### Introduction and promotion of a new target group: 6-11 month old children

In early 1999, following the international guidelines, children 6-11 months old were added as a new target group for routine vitamin A supplementation. This was done to minimize the impact of the economic crisis on the nutritional status of this age group. Stocks of the 100,000 IU (blue) vitamin A capsules required to reach this new target group for a one-year period were procured through UNICEF and distributed by the GOI.

In order to promote this new target group to the public, a special media campaign was launched in early 2000. The campaign included TV and radio broadcasts, banners and signboards for *Puskesmas* and *Posyandu* facilities, and technical flyers about the new target group that were distributed to the district health offices (see Figure 1). According to the estimates gathered from the district health offices immediately following the February 2000 distribution month, the stocks of 100,000 IU capsules on hand would be insufficient to supply the *Puskesmas* and *Posyandu* facilities with their needs for the August 2000 vitamin A distribution month.

The Vitamin A Working Group, formed at the end of 1999 and comprised of members from the Ministry of Health (MOH), the national pharmaceutical industry, UNICEF, HKI and other institutions, is currently working to ensure that adequate supplies of all vitamin A capsules required for the August 2000 distribution month are being procured. However, institutionalizing the procedures, required to procure the new 100,000 IU vitamin A capsules on a routine basis, may take the longer than initially anticipated. One important reason for this delay is the current process of decentralization, which will have an effect on how all vitamin A capsules are procured and distributed. The change in procedure, unfamiliarity among provincial/district health workers with the new blue capsule and the large program coverage area also contribute to the delay.

Even though the red and blue capsules were specifically designed for use among different target groups, the only difference between the capsules is the dosage of vitamin A. One solution to a temporary shortage in 100,000 IU capsules is to train local health care workers to dose children aged 6-11 months with half the contents of a 200,000 IU (red) capsule. This approach is routinely used in countries where the lower dose 100,000 IU capsules have never been available. In 1995, the MOH established a

**Figure 2.** Alternative scenarios for vitamin A capsule supply in August 2000

Type of vitamin A capsules	Supply at Puskesmas/ Posyandu facility	Action in August 2000
Red capsules (200,000 IU)	Adequate	Dose children aged 1-5 yrs with a red capsule
Blue capsules (100,000 IU)	Adequate	Dose children aged 6-11 months with a blue capsule
	Inadequate	Dose children aged 6-11 months using half the drops in a red capsule

precedent for using this approach in Indonesia for the treatment of xerophthalmia and measles in Bengkulu province, when it issued guidelines describing the half-dosing method. Although providing adequate stocks of the 100,000 IU capsule was what was originally planned to meet the program needs for the new target group of younger children, this may not be possible in all locations. The objective in starting program activities for the new target group of younger children is to help protect their health. If an alternative strategy for dealing with an inadequate supply of 100,000 IU capsules is developed, then children 6-11 months old who come to the *Puskesmas* and *Posyandu* health facilities during the August 2000 campaign will not leave without receiving an appropriate dose of vitamin A.

### Recommendations

- Prior to the August 2000 distribution campaign, a coordinated effort should be made to ensure that adequate supplies of both red and blue capsules reach the field level.
- The potential for a shortage of blue capsules should be considered and a contingency plan developed.
- The functions of the existing procurement system should be determined and the means by which a decentralized system can be strengthened and streamlined to avoid shortages in the future should be explored.
- The means by which the existing distribution system can be strengthened should be explored.
- Along with an emphasis on adequate procurement and distribution, more intensive promotional efforts should be made to educate all levels of the governmental distribution system and local communities about the new target group (children aged 6-11 months).



**Helen Keller**  
WORLDWIDE  
Helen Keller International  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Dr. Amy Rice  
Vitamin A Program Director  
E-mail: arice@hki-indonesia.org
- Pim van Heijst  
Vitamin A Program Coordinator  
E-mail: pvanheijst@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Country Director  
E-mail: rtjong@compuserve.com

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in rural West Java**  
**Key results for the period: Feb 1999 – Feb 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for West Java as collected in the period Feb 1999 – Feb 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of West Java, excluding Jakarta, was divided into four ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from West Java per round of data collection was 4,800 (4 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in West Java in Feb-Mar 1999, Apr-May 1999 and Dec 1999-Feb 2000.

*Data collected*

Data collected included information on household composition, parental education

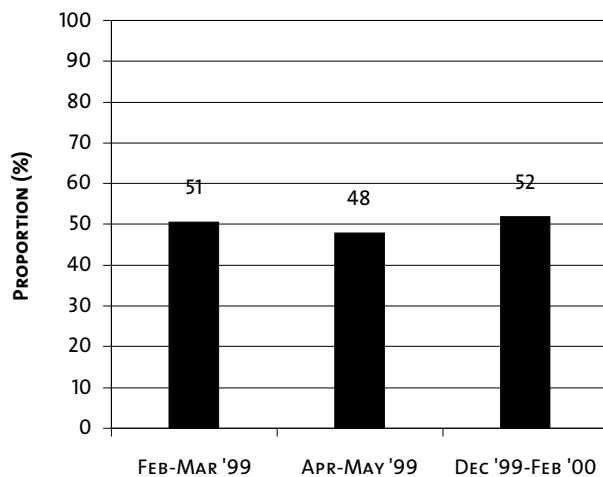
and occupation, sanitary conditions, land and livestock ownership, food production and consumption, vitamin A capsule (VAC) receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: Central Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in West Java, are described.



**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



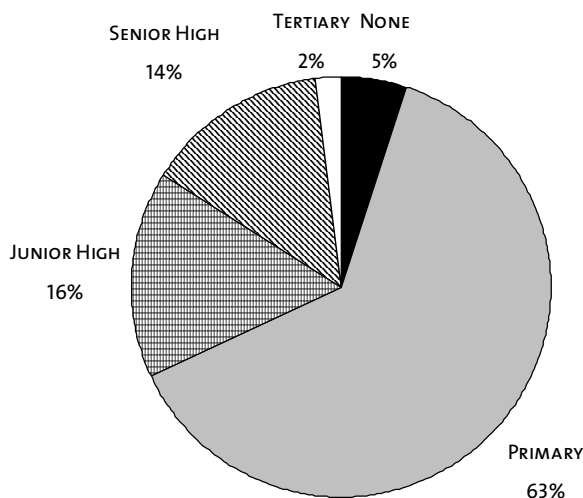
### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *West Java* – Approximately 1 in 2 households in West Java had adequately iodized salt and that proportion had not changed much between Jan 1999 and Feb 2000.

**Fig 2. Mothers without formal education**



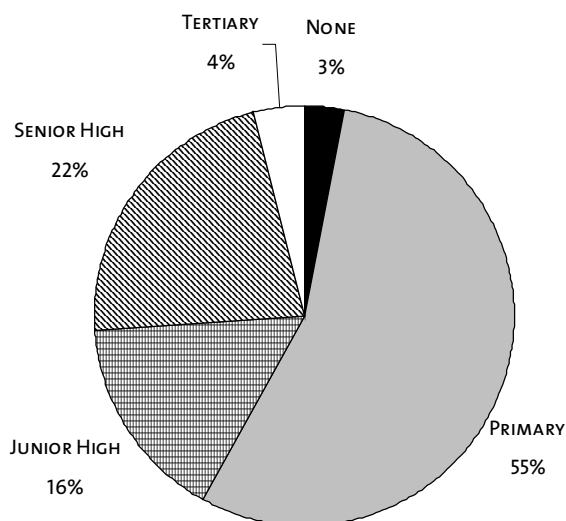
### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *West Java* – The proportion of mothers without education was small (5%).

**Fig 3. Fathers without formal education**



### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *West Java* – The proportion of fathers without education was small (3.3%).

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan 1999 and Feb 2000. *West Java* – The proportion of couples in West Java who practiced family planning was among the highest in the NSS sites.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *West Java* – Only 40-45% of infants younger than 4 months old was exclusively breastfed.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *West Java* – Coverage in Aug '99 was the highest among all NSS sites.

Fig 4. Couples who practice family planning

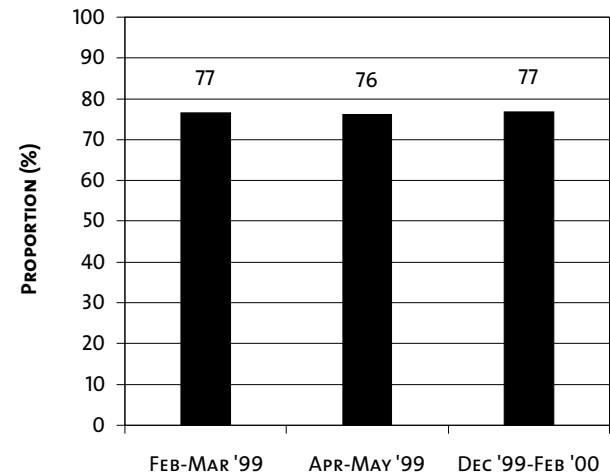


Fig 5. Children younger than 4 months old exclusively breastfed

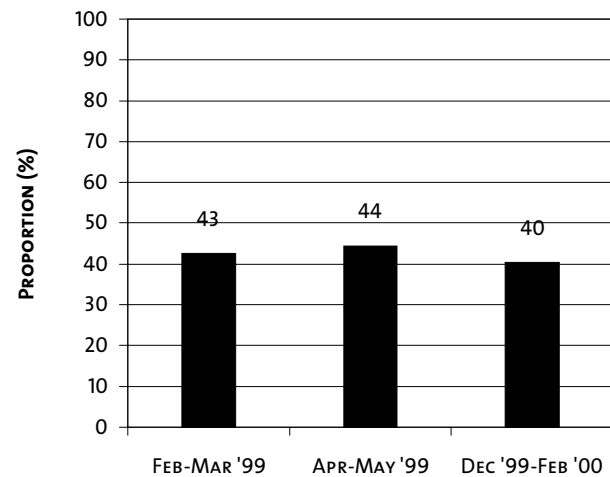
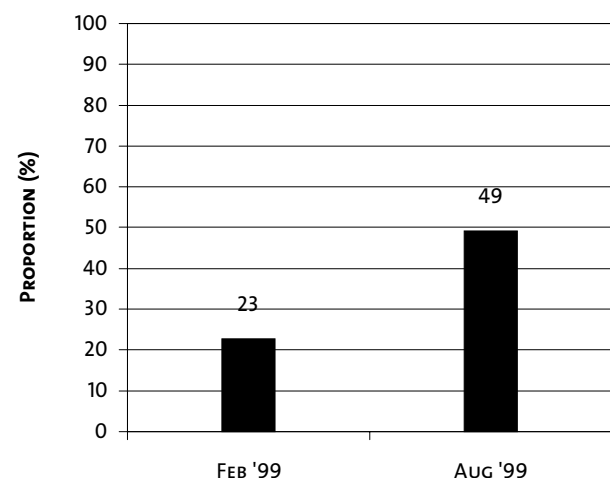
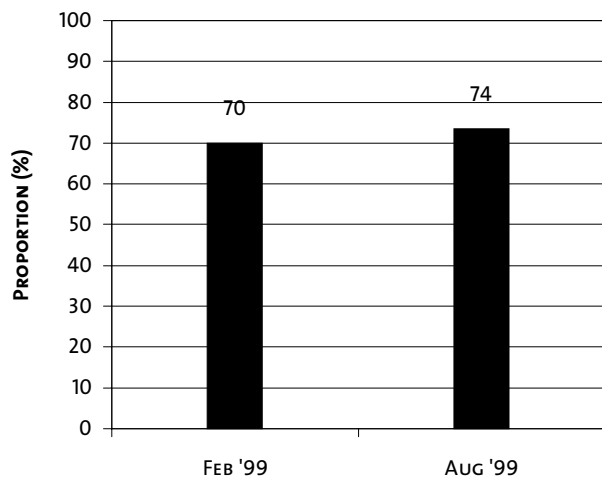


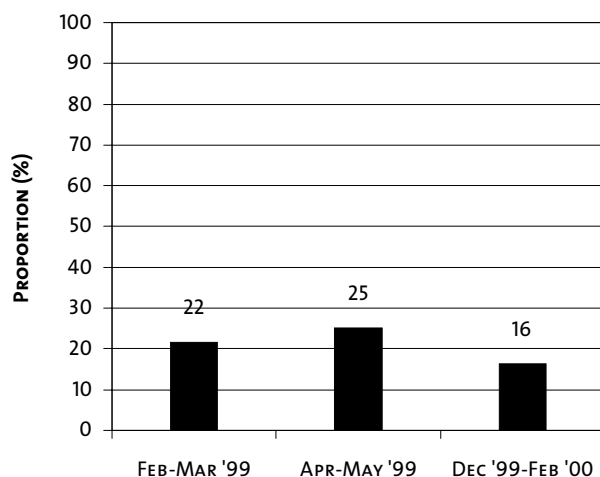
Fig 6. VAC coverage among children aged 6-11 months, by distribution month



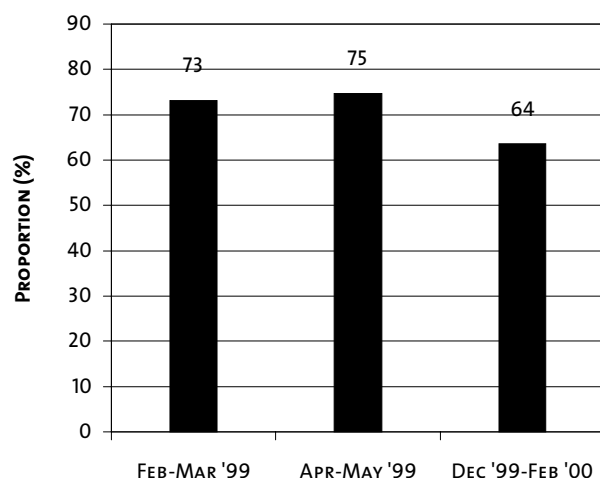
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *West Java* – Contrary to most NSS sites, coverage in West Java increased between Feb and Aug '99.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *West Java* – Only 1 in every 5-6 women received a vitamin A capsule after delivery and coverage decreased between early 1998 and late 1999.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban

and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *West Java* – The prevalence decreased in the second half of 1999, but was still very high.

#### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *West Java* – Prevalence decreased in the second half of 1999 and was the same as pre-crisis levels.

#### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *West Java* – Prevalence of maternal wasting remained more or less the same between Jan 1999 and Feb 2000.

#### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is

Fig 10. Anemia among non-pregnant women (Hb <120 g/L)

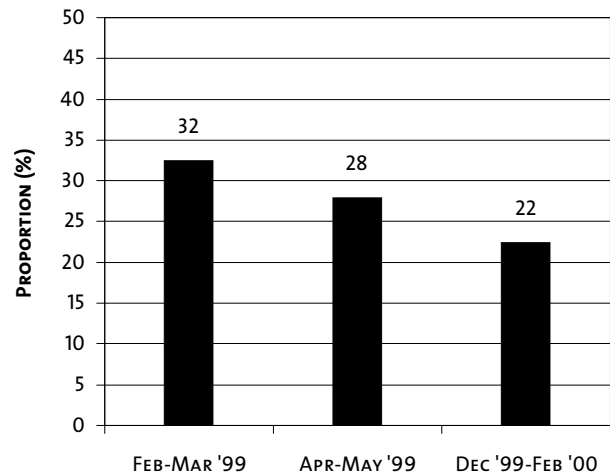


Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)

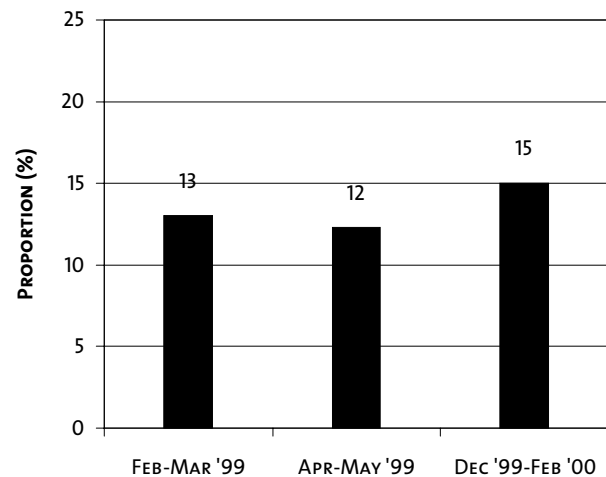
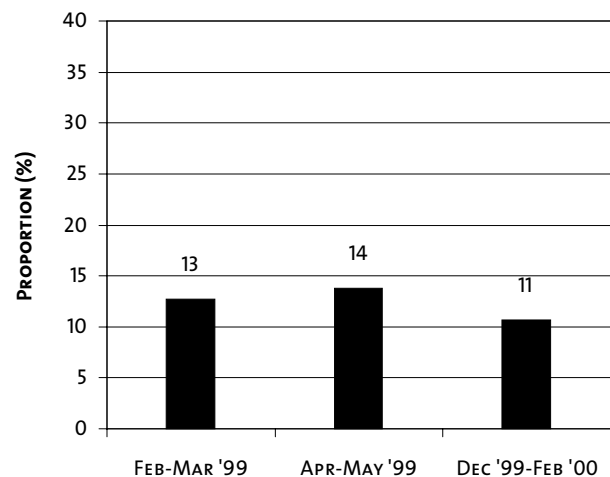
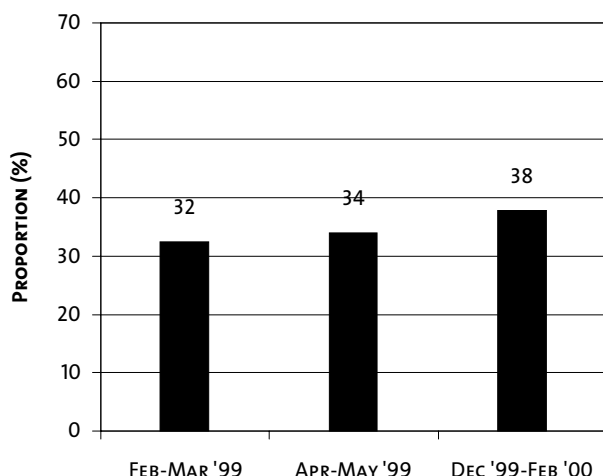


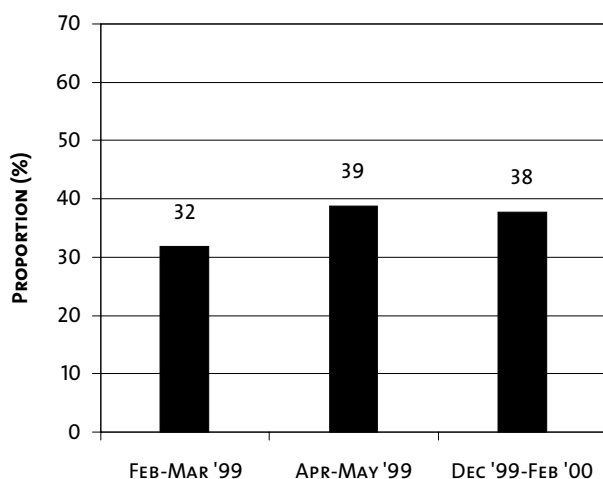
Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)



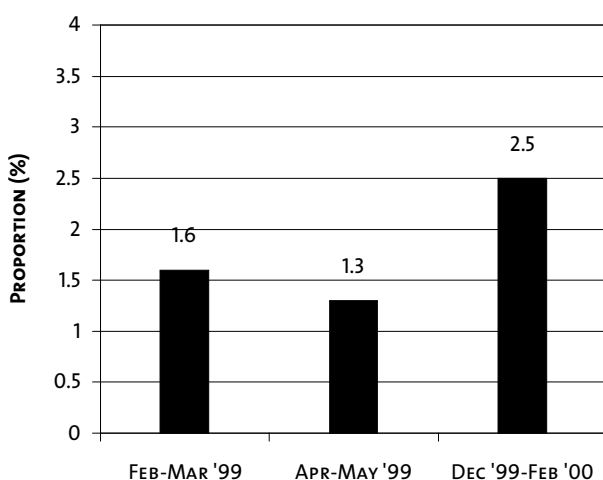
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *West Java* – The prevalence of wasting was less than half that observed in Jakarta, but the trend was the same: an increase followed by a decrease.

### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *West Java* – The prevalence of stunting is among the lowest in the NSS sites, but still relatively high, indicating that the quality of the diet is relatively poor (low micronutrient content).

### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *West Java* – The



prevalence of underweight children was among the lowest in the NSS sites, as the prevalence of stunting is also among the lowest.

### Maternal diarrhea (see Fig 15)

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

Data collection method. Respondents were asked whether they suffered from diarrhea during the previous 7 days.

Findings. *General* – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *West Java* - The prevalence of diarrhea among mothers was higher than in most other rural NSS sites and comparable to that found in Lombok.

### Child diarrhea, 12-23 months old (see Fig 16)

What is indicated. See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

Data collection method. Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

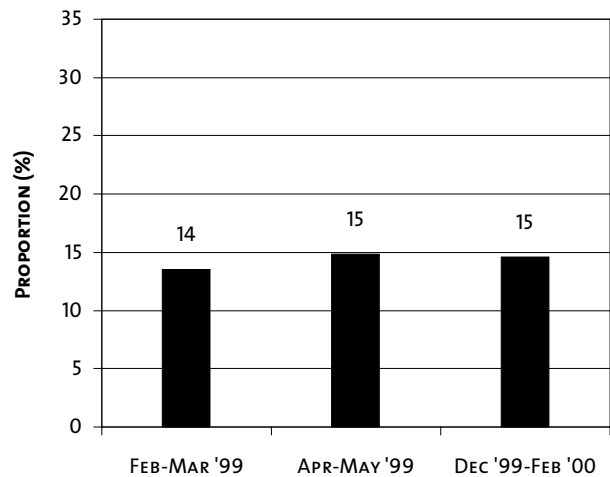
Findings. *General* – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *West Java* – 1 in every 6 children suffered from diarrhea during the week preceding the interview.

### Conclusions

#### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

#### West Java

In rural West Java, recovery from the crisis has clearly commenced. Compared to other areas of the country, the province performs average to better. Particular attention needs to be paid to the high prevalence of anemia among underfive children, the relatively small proportion of households that uses iodized salt, and the low coverage of vitamin A capsules among mothers within one month after delivery.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in Central Java**  
**Key results for the period: Nov 1998 – Nov 1999**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for Central Java as collected in the period Nov 1998 – Nov 1999.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of Central Java was divided into six ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from Central Java per round of data collection was 7,200 (6 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in Central Java in Nov 1998-Jan 1999, Apr-May 1999, and Sept-Nov 1999.

*Data collected*

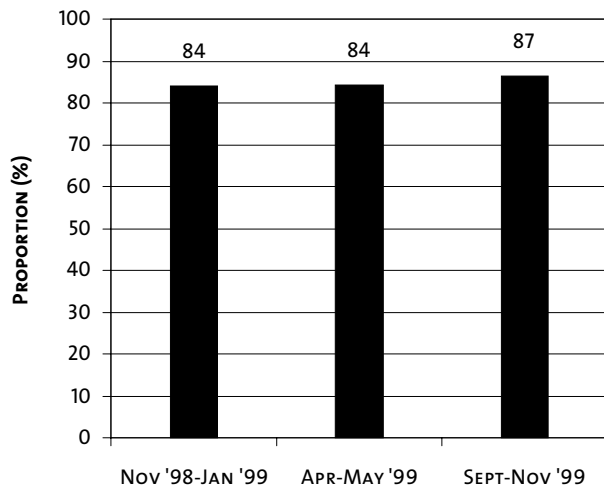
Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

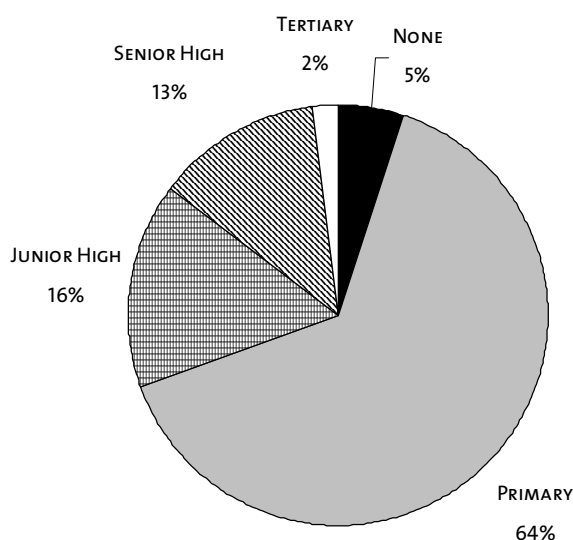
*Findings presented*

In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Central Java, are described.

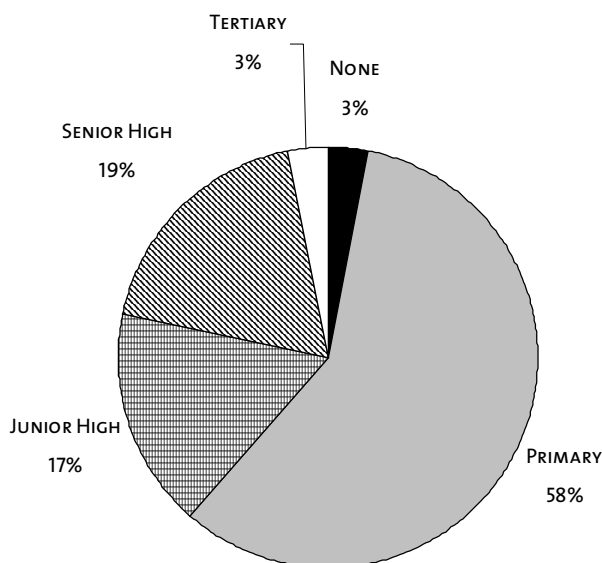
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Central Java* – The proportion of households with adequately iodized salt was very high and stable throughout 1999.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Central Java* – The proportion of mothers without education was among the lowest in all the NSS sites.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Central Java* – The proportion of fathers without education was among the lowest in all the NSS sites.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *Central Java* – The proportion of couples in Central Java who practiced family planning was among the highest in all the NSS sites.

#### **Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)**

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). *Central Java* – The proportion of infants younger than 4 months of age that was exclusively breastfed was average, when compared to other NSS sites, but relatively low (45-55%).

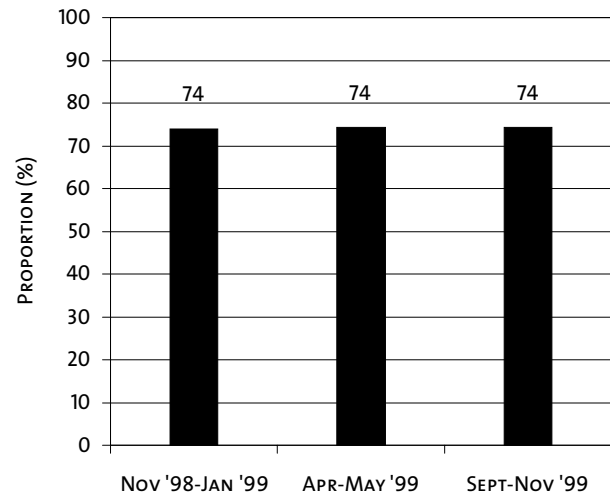
#### **Vitamin A capsule receipt among children 6-11 months old (see Fig 6)**

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

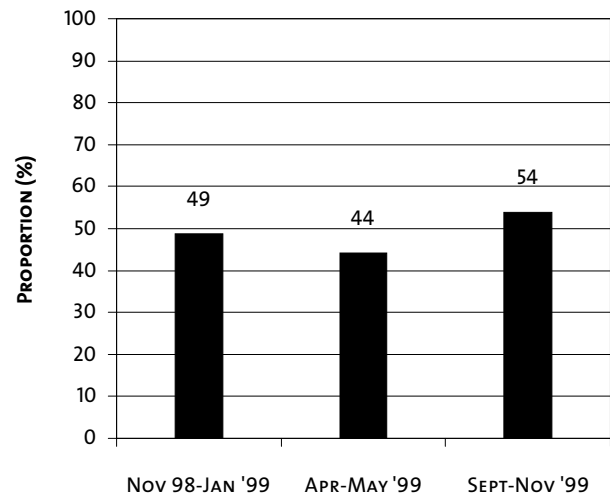
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *Central Java* – Coverage was below 30%, which is low, also when compared to the other NSS sites.

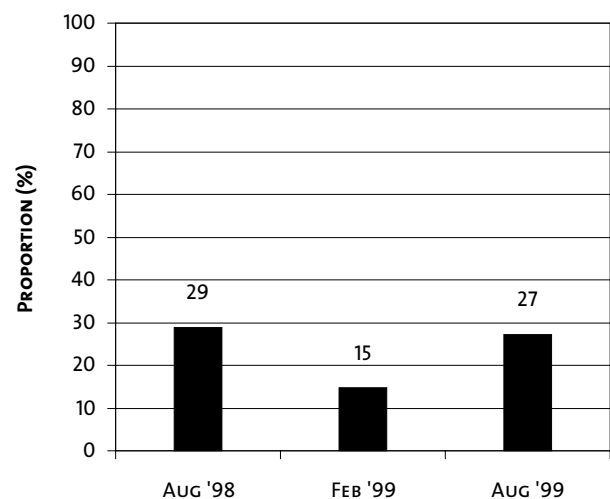
**Fig 4. Couples who practice family planning**



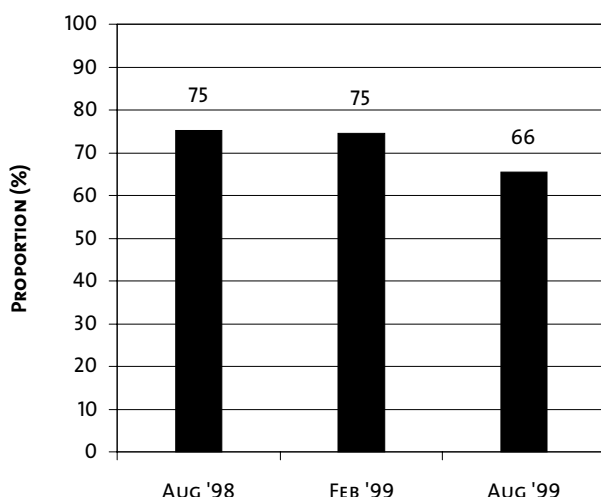
**Fig 5. Children younger than 4 months old exclusively breastfed**



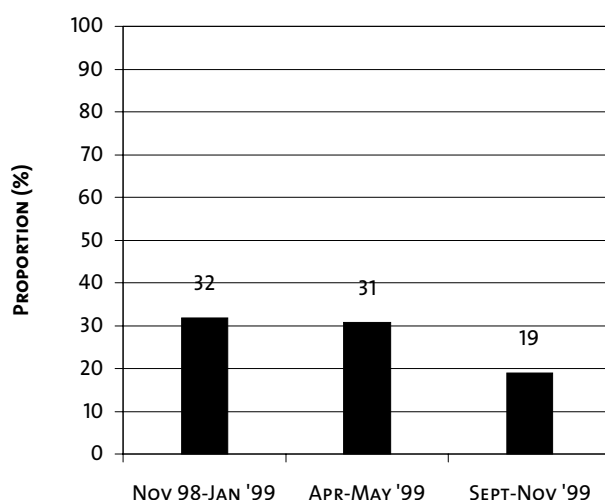
**Fig 6. VAC coverage among children aged 6-11 months, by distribution month**



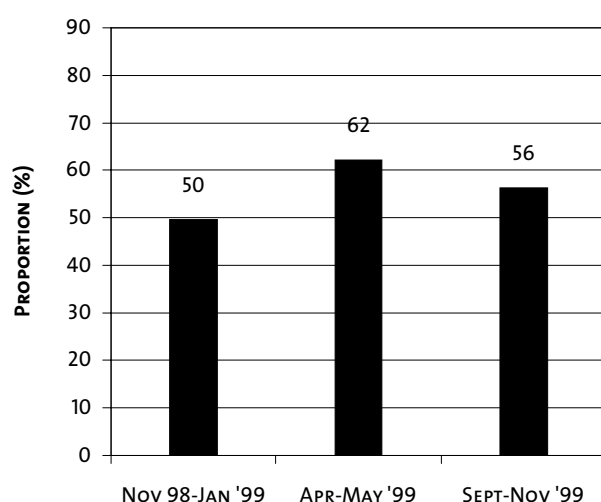
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Central Java* – In Aug '98 and Feb '99, coverage was relatively high, but it was lower in Aug '99.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Central Java* – Coverage was relatively high because of the special program that started in 1996, but decreased later in 1999.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban

and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Central Java* – Although prevalence was among the lowest observed, it was still very high.

#### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Central Java* – Prevalence was relatively low, comparable to pre-crisis levels, and stable throughout 1999.

#### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

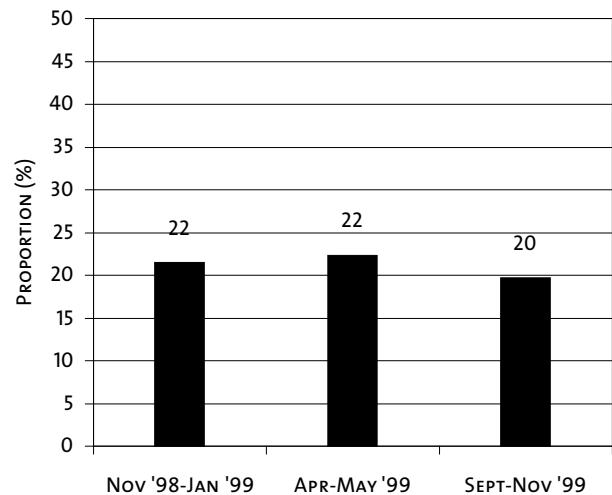
**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Central Java* – In late 1998 and early 1999, prevalence was high, but it had decreased very much by the end of 1999.

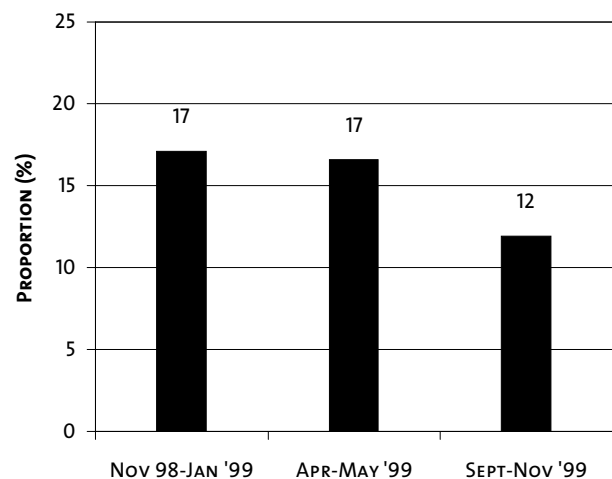
#### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is

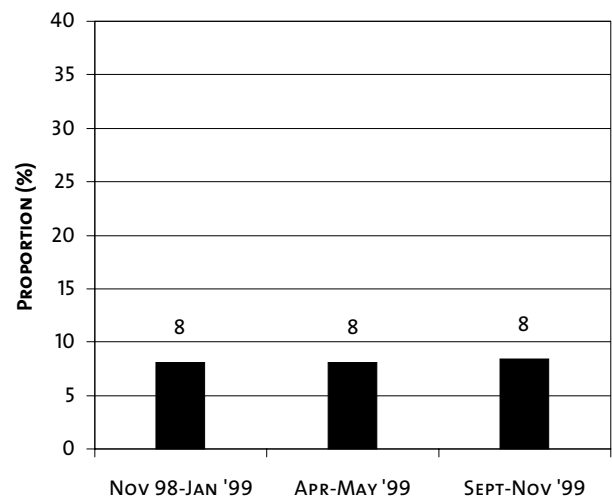
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



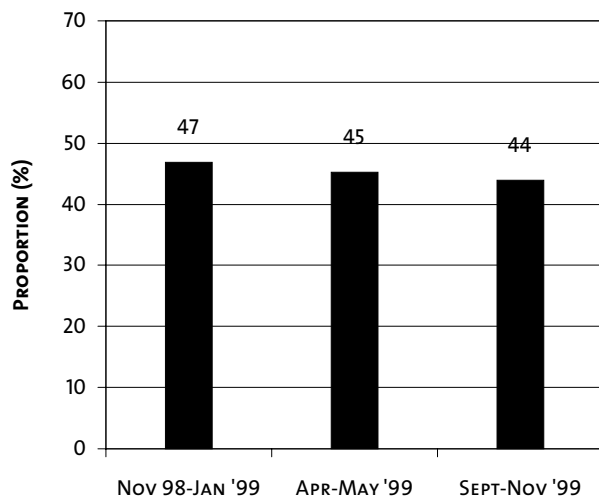
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



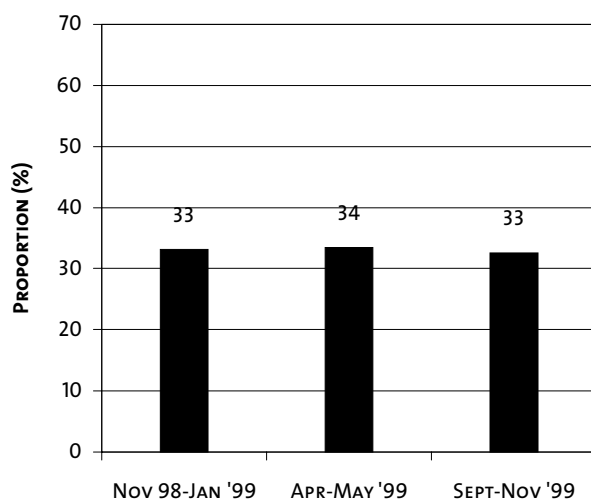
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



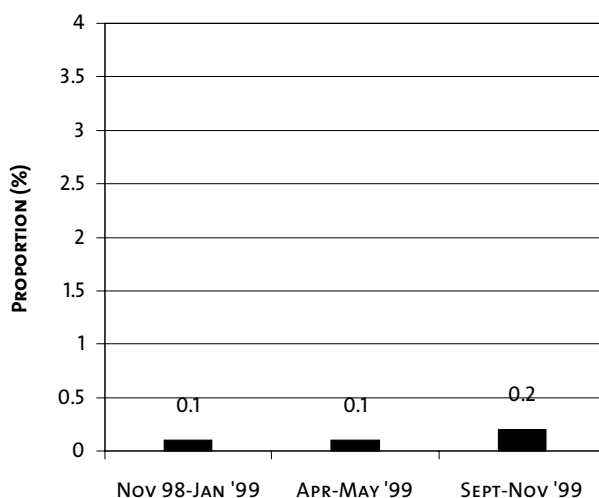
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). **Central Java** – The prevalence of wasting among children was the lowest in all the NSS sites and it was stable throughout 1999.

#### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. **Central Java** – The prevalence of stunting was relatively high, but might be declining.

#### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. **Central Java** – The prevalence of underweight was among the lowest observed, which is mainly explained by the low prevalence of wasting.



**Maternal diarrhea (see Fig 15)**

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

Data collection method. Respondents were asked whether they suffered from diarrhea during the previous 7 days.

Findings. *General* – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *Central Java* – The prevalence of diarrhea was the lowest observed.

**Child diarrhea, 12-23 months old (see Fig 16)**

What is indicated. See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

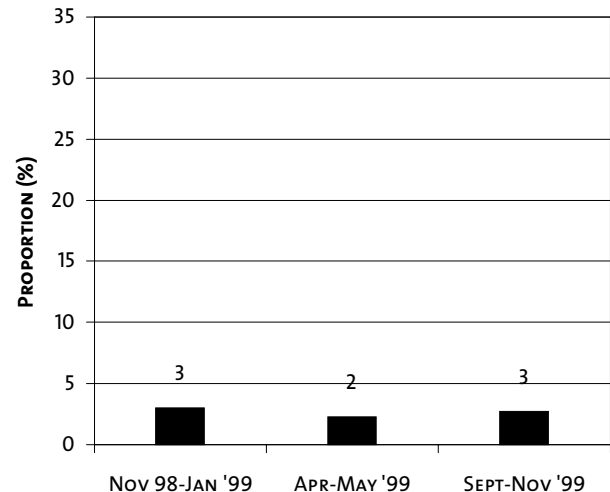
Data collection method. Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

Findings. *General* – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *Central Java* – The prevalence of child diarrhea was also the lowest observed.

**Conclusions***General*

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



(aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

*Central Java*

In Central Java, the impact of the crisis has been among the smallest observed, and the province is among the 'best-off' among the areas surveyed. The main areas that need attention are the maintenance of good coverage of high-dose vitamin A capsules among children as well as among women within one month after delivery, and reducing the prevalence of anemia among underfives through iron or multi-micronutrient supplementation.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in Jakarta**  
**Key results for the period: Jan 1999 – Jan 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for slum areas of Jakarta as collected in the period Jan 1999 – Jan 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. In Jakarta and Surabaya, the following steps were taken for their selection. First, *kelurahan* (or village-level administrative units) with slums were identified. Then, the particular *RW* (or hamlet/subvillage-level administrative unit) of the *kelurahan* with slums were identified, and 3-6 *RWs* were then randomly selected per *kelurahan*, to arrive at a total of 80 *RWs*. From each *RW*, 30 households with underfive children situated in a slum area (often, only part of the *RW* is a slum area) were then selected by systematic sampling. For Jakarta, three different slum areas were identified, from each of which a total of approximately 80 *RWs* was selected for the first round of data collection ( $3 \times 80 \times 30 = 7,200$  households) and 40 for each subsequent round ( $3 \times 40 \times 30 = 3,600$  households).

*Period of data collection*

Data reported here were collected in Jakarta in Jan-Mar 1999, Apr-May 1999, and Nov 1999-Jan 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

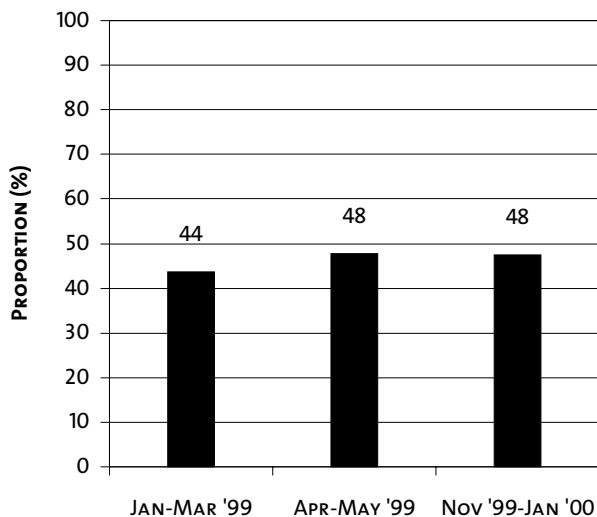
livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

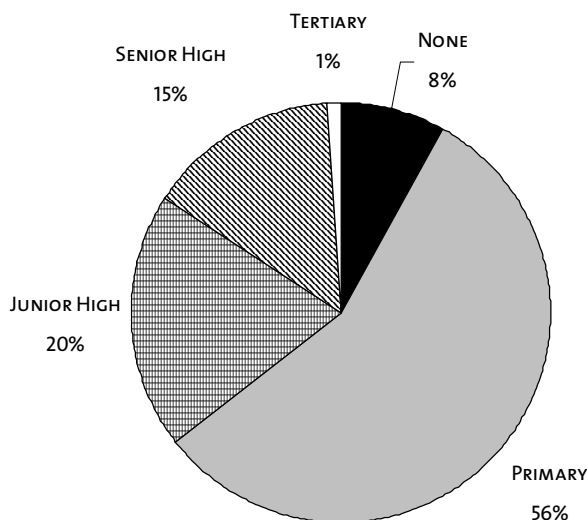
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Jakarta, are described.



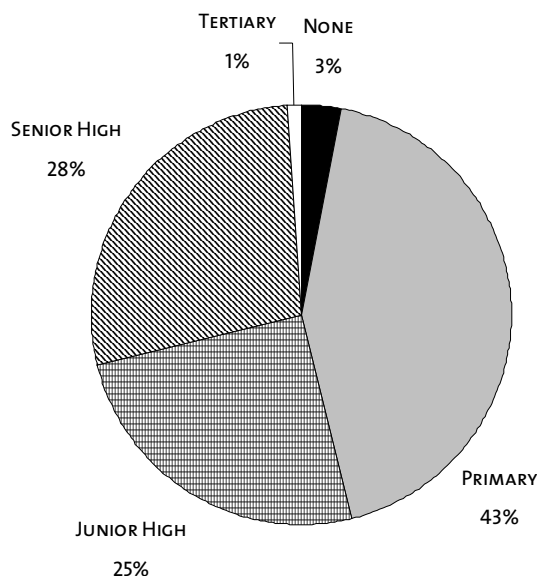
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Jakarta* – Nearly 1 in 2 households in Jakarta had adequately iodized salt and that proportion slightly increased between Jan and Apr 1999.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Jakarta* – The proportion of mothers without education was slightly high, especially when compared to the other urban slum NSS sites.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Jakarta* – The proportion of fathers without education was small.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. **Jakarta** – Nearly 70% of couples in Jakarta practiced family planning.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. **Jakarta** – The proportion of infants younger than 4 months that was exclusively breastfed was among the lowest observed.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). **Jakarta** – Coverage was relatively low, but doubled between Feb and Aug '99.

Fig 4. Couples who practice family planning

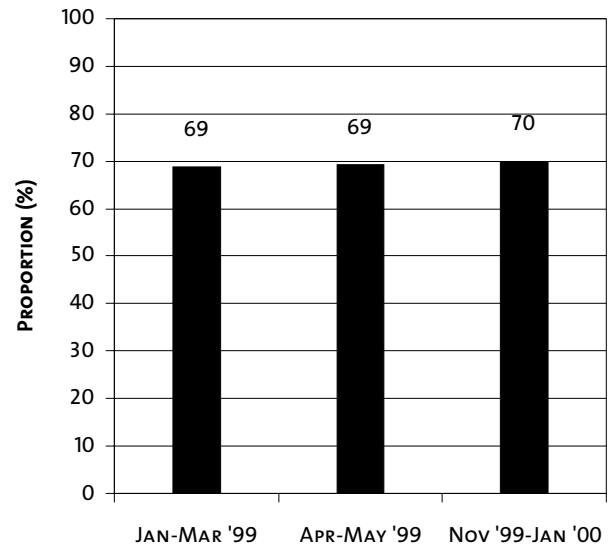


Fig 5. Children younger than 4 months old exclusively breastfed

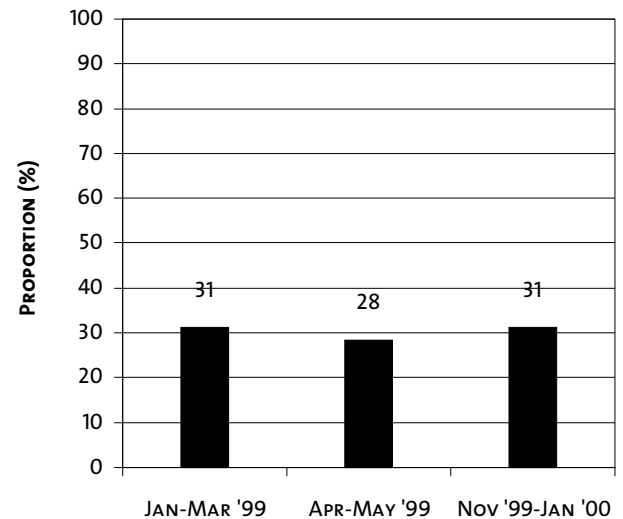
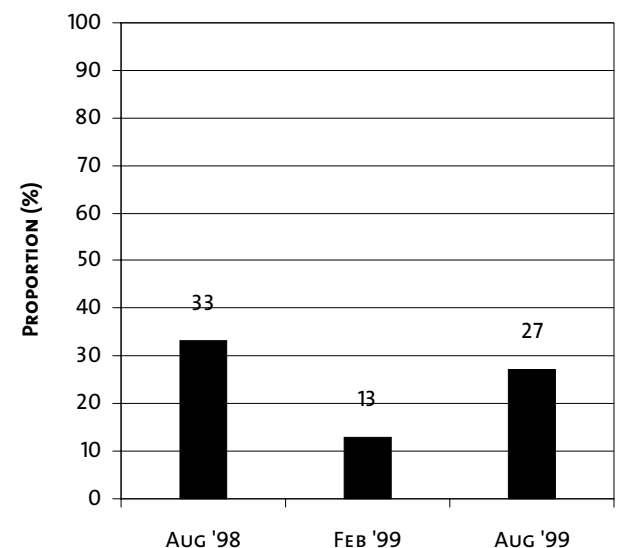
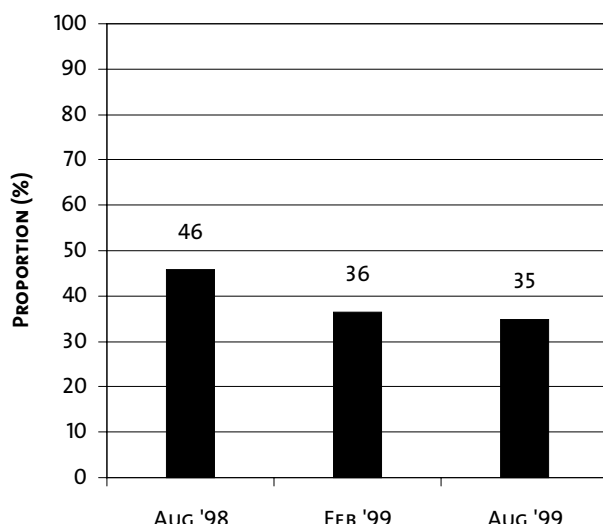


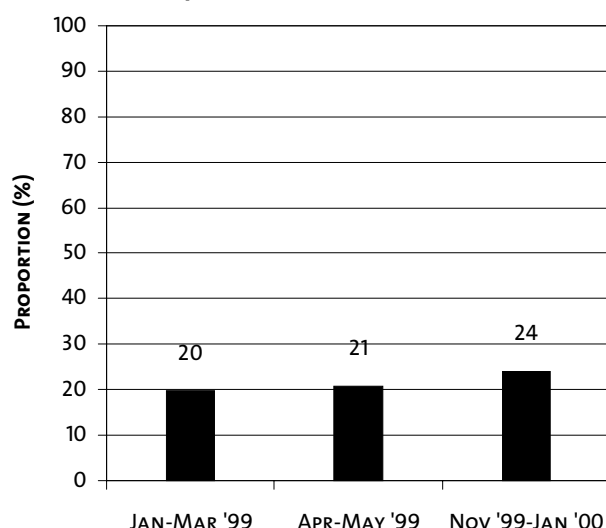
Fig 6. VAC coverage among children aged 6-11 months, by distribution month



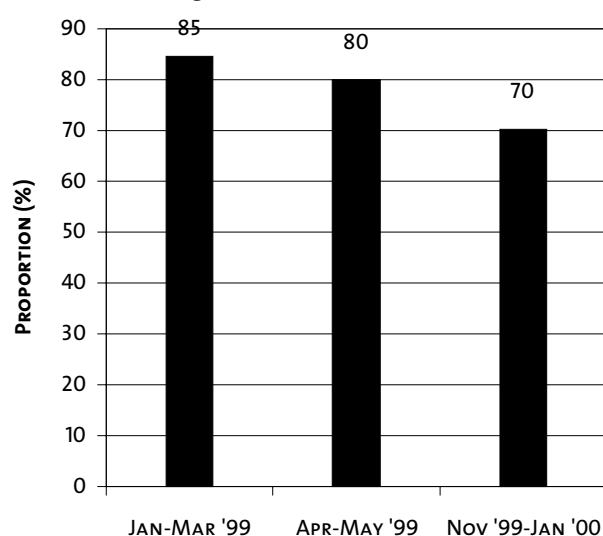
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)

**What is indicated.** Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 months. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

**Data collection method.** Same as for children aged 6-11 months (see above).

**Findings. General** – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Jakarta* – Coverage was nearly the lowest observed and urban slum areas have therefore been selected as a priority target group for the next distribution rounds for vitamin A capsules.

### Vitamin A capsule receipt among women within one month after delivery (see Fig 8)

**What is indicated.** Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

**Data collection method.** Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

**Findings. General** – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Jakarta* – Only 1 in every 5 women received a vitamin A capsule after delivery and coverage increased slightly between early 1998 and late 1999.

### Child anemia, 12-23 months old (see Fig 9)

**What is indicated.** Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

**Data collection method.** Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

**Findings. General** – Anemia prevalence among

young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Jakarta* – The prevalence was the highest observed, and although it declined throughout 1999, it was still alarmingly high.

### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Jakarta* – In early 1999, prevalence was very high. But by the end of the year, it had returned to pre-crisis levels.

### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Jakarta* – Prevalence of maternal wasting declined throughout 1999.

### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of

Fig 10. Anemia among non-pregnant women (Hb <120 g/L)

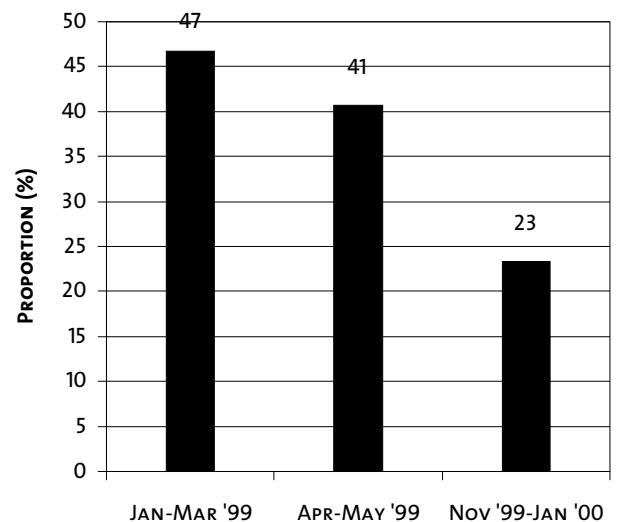


Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)

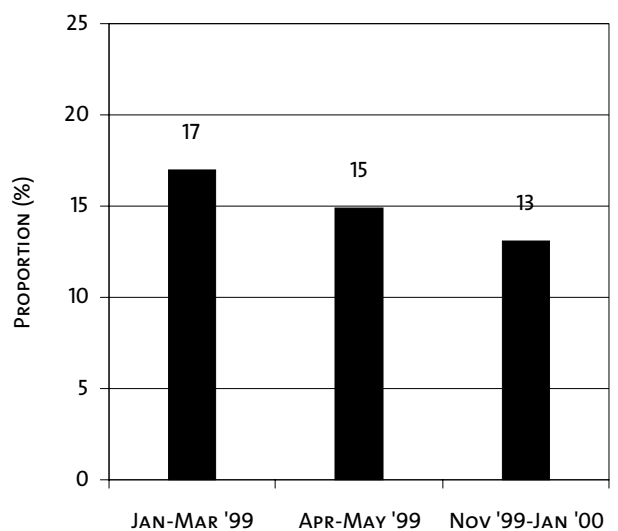
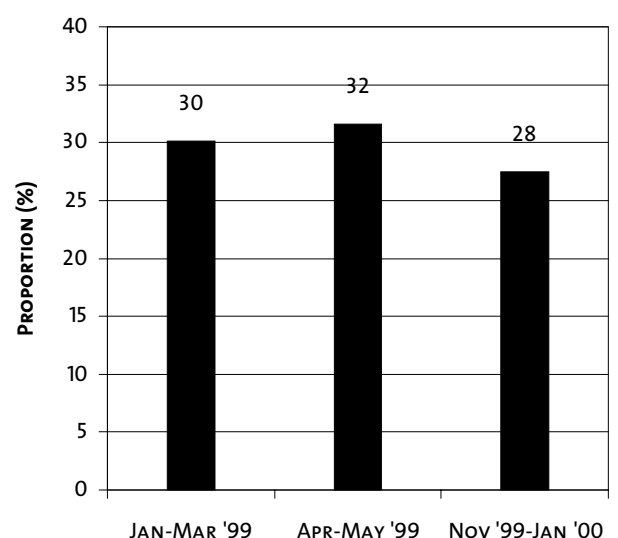
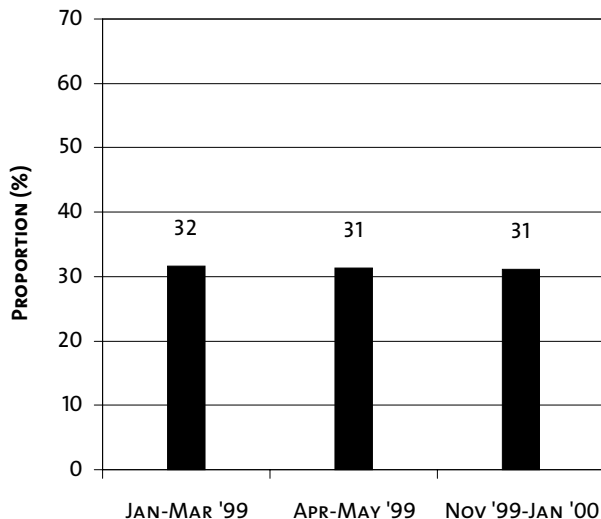


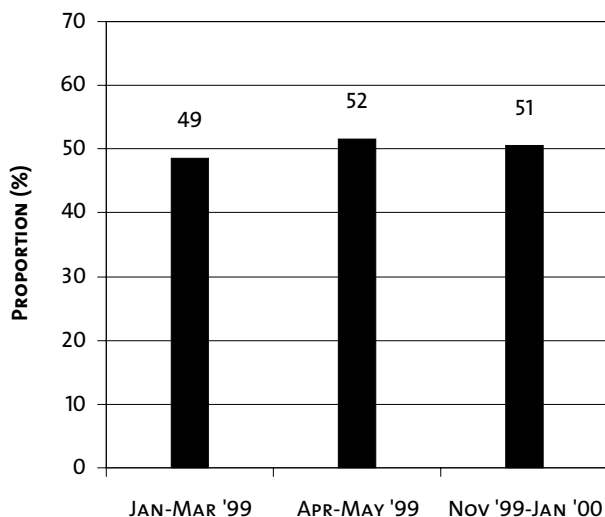
Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)



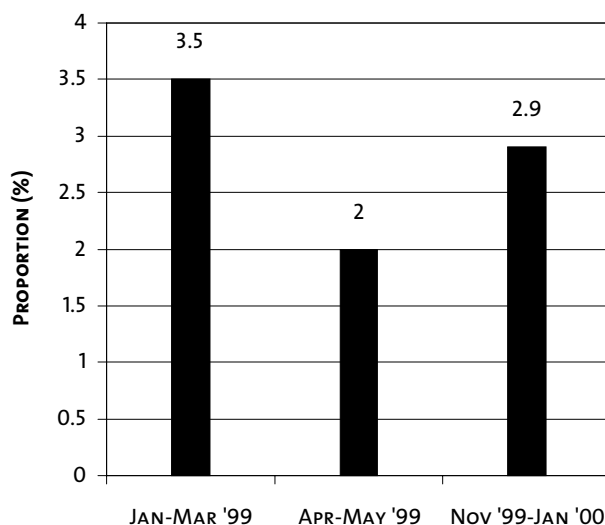
**Fig 13. Stunting among children aged 12-23 months (HAZ < -2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ < -2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). **Jakarta** – The prevalence of wasting was the worst observed and is still very high.

#### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. **Jakarta** – The prevalence of stunting is among the lowest in the NSS sites, but still relatively high, indicating that the quality of the diet is relatively poor (low micronutrient content).

#### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. **Jakarta** – Prevalence



of underweight was average, because although prevalence of stunting was relatively low, prevalence of wasting was very high.

#### Maternal diarrhea (see Fig 15)

**What is indicated.** Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **Jakarta** – The prevalence of diarrhea among mothers was among the highest observed.

#### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural NSS sites because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

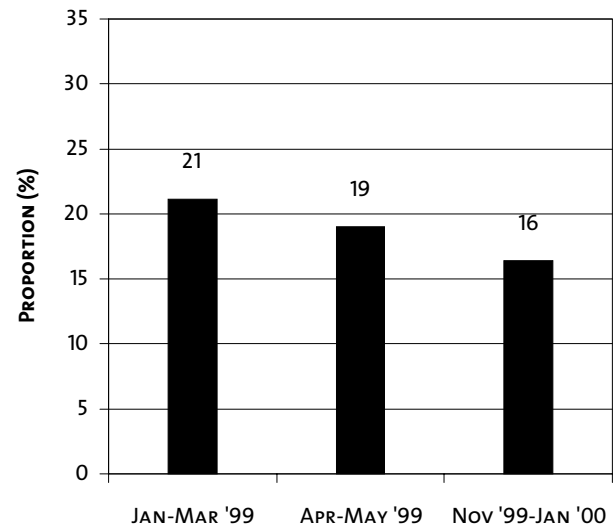
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. **Jakarta** – Of every 5-6 children 1 suffered from diarrhea during the week preceding the interview.

### Conclusions

#### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

#### Jakarta

In Jakarta, recovery from the crisis has clearly commenced. However, the prevalence of wasting and anemia, particularly among young children, is still very high. The coverage of vitamin A capsules needs to be improved among all children as well as mothers, and more households should use iodized salt.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in East Java**  
**Key results for the period: Feb 1999 – Feb 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for East Java as collected in the period Feb 1999 – Feb 2000.**

*Selection of households*

For each round of data collection a new sample of households was selected. For this purpose, the whole of East Java, excluding Surabaya, was divided into three ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from East Java per round of data collection was 3,600 (3 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in East Java in Feb-Mar 1999, Apr-May 1999, and Dec 1999-Feb 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

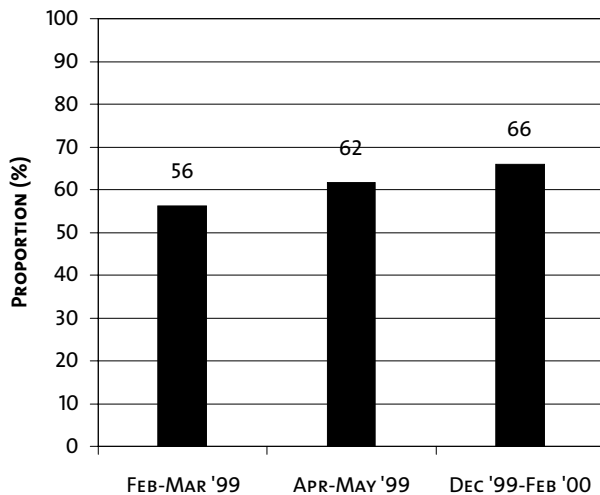
livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

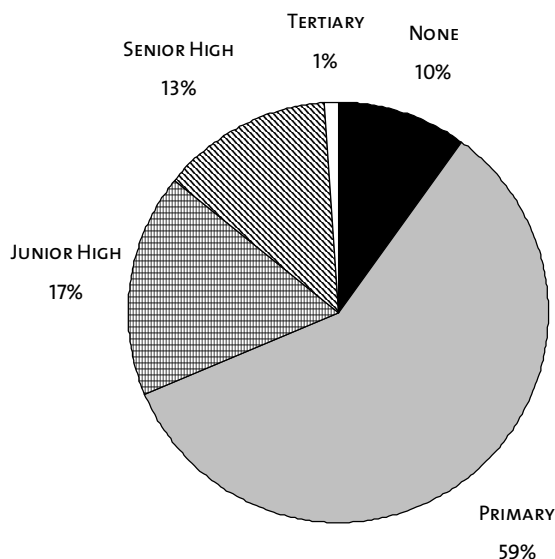
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in East Java, are described.



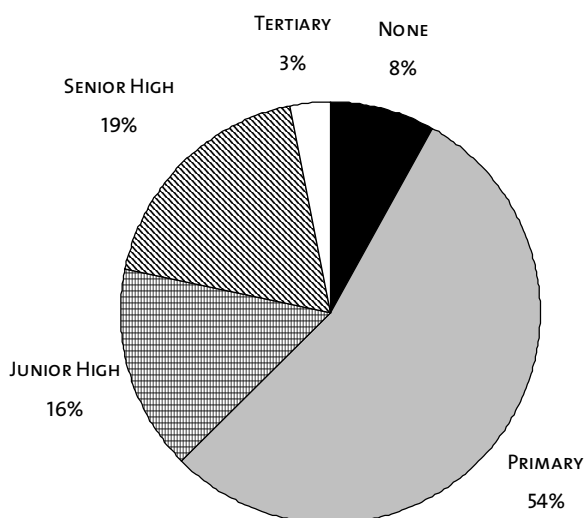
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. General – In most NSS sites the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *East Java* – By the end of 1999, approximately 65% of households had adequately iodized salt, an increase of nearly 20% within a year.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. General – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *East Java* – The proportion of mothers without education was relatively large.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. General – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *East Java* – The proportion of fathers without education was also relatively large.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. **East Java** – The proportion of couples in East Java who practiced family planning was among the highest in the NSS sites.

#### **Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)**

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. **East Java** – Only 30-40% of infants younger than 4 months of age was exclusively breastfed.

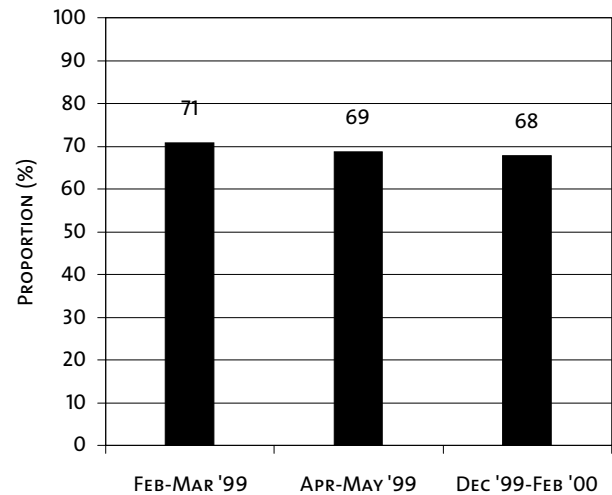
#### **Vitamin A capsule receipt among children 6-11 months old (see Fig 6)**

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

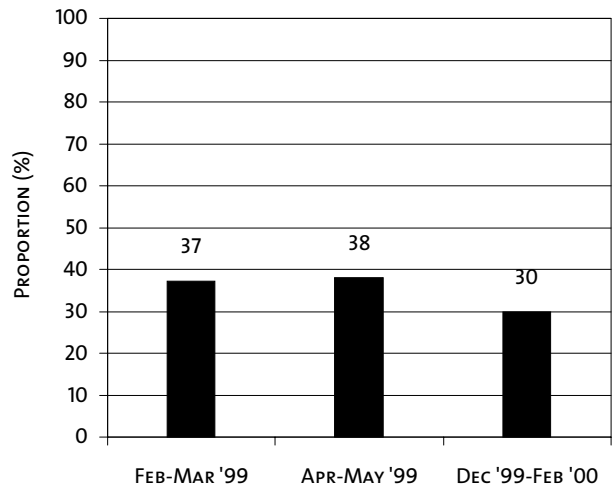
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). **East Java** – Coverage in Aug '99 was among the highest in the NSS sites.

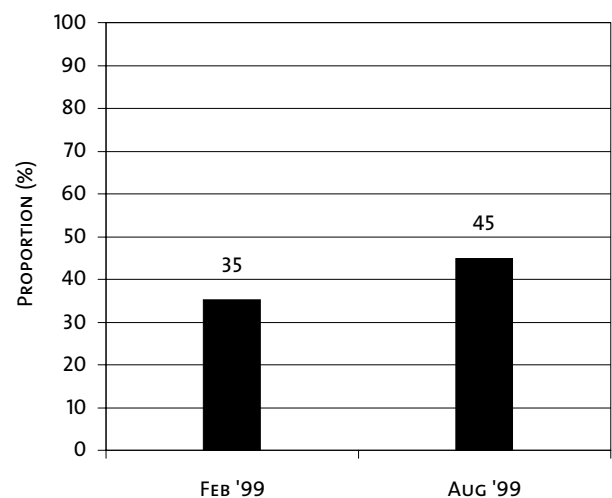
**Fig 4. Couples who practice family planning**



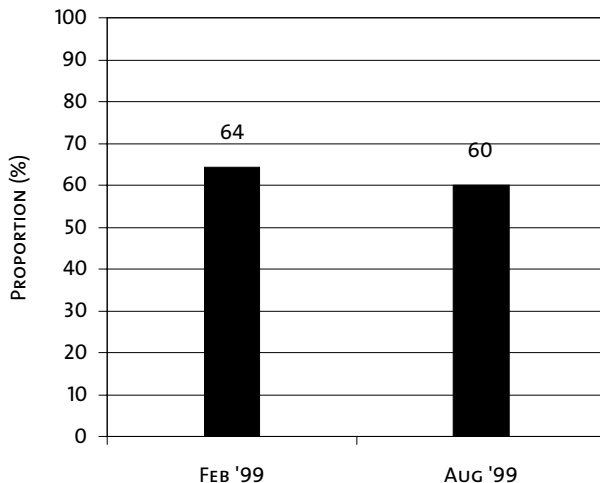
**Fig 5. Children younger than 4 months old exclusively breastfed**



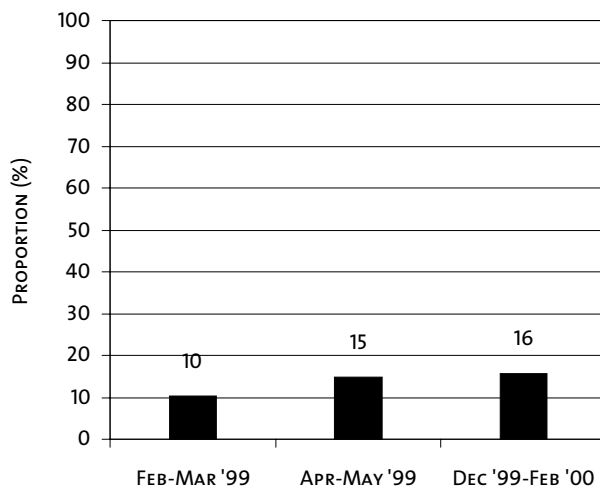
**Fig 6. VAC coverage among children aged 6-11 months, by distribution month**



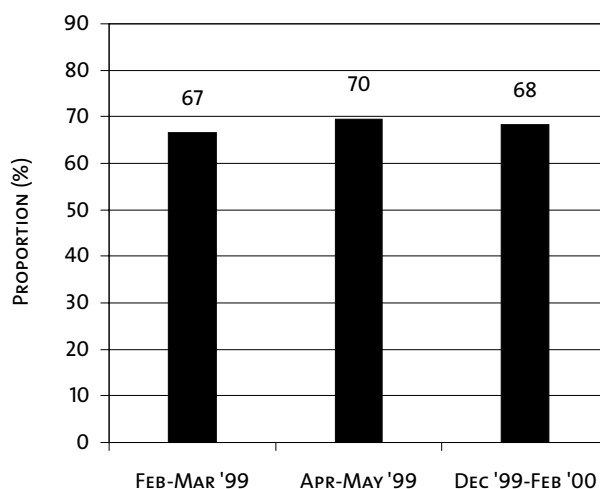
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *East Java* – There was a slight decrease of coverage between Feb and Aug '99.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *East Java* – Despite an increase of coverage between early 1998 and late 1999, coverage was still very low (only 16%).

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban

and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *East Java* – The prevalence remained more or less the same throughout 1999 and is very high.

#### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *East Java* – Prevalence remained more or less the same throughout 1999 and was higher than before the onset of the crisis.

#### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *East Java* – Prevalence of maternal wasting remained more or less the same between Feb 1999 and Feb 2000.

#### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well

Fig 10. Anemia among non-pregnant women (Hb <120 g/L)

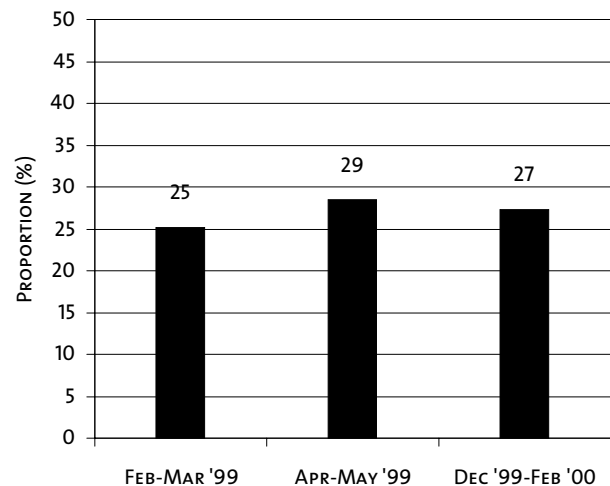


Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)

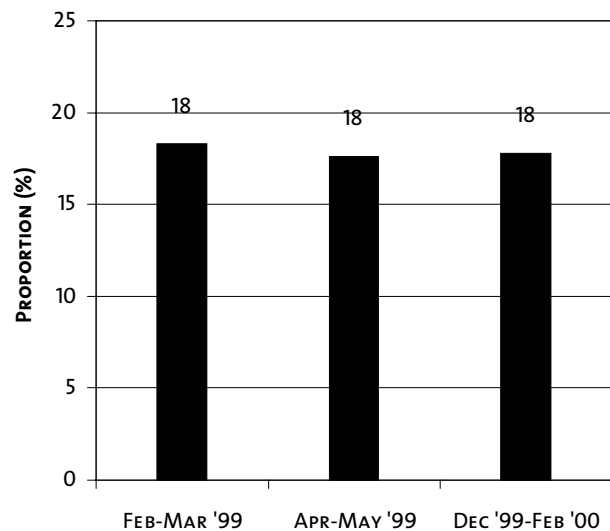
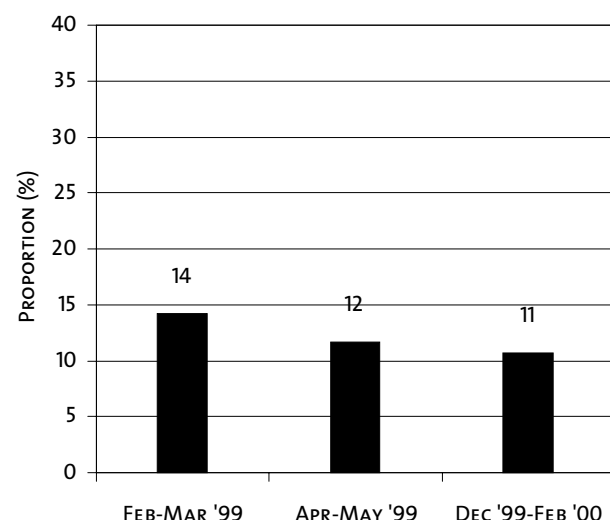
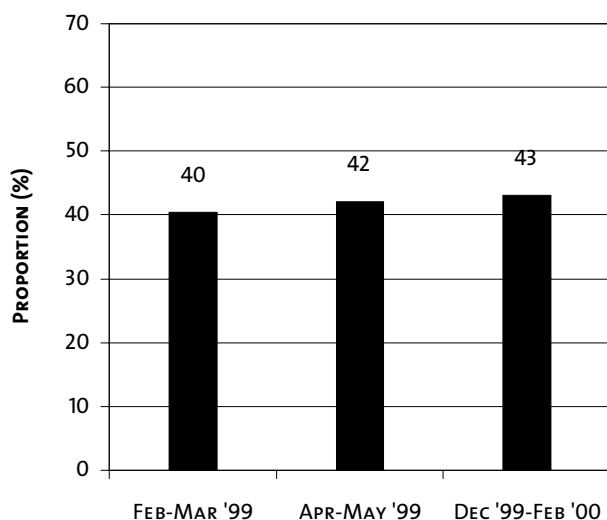


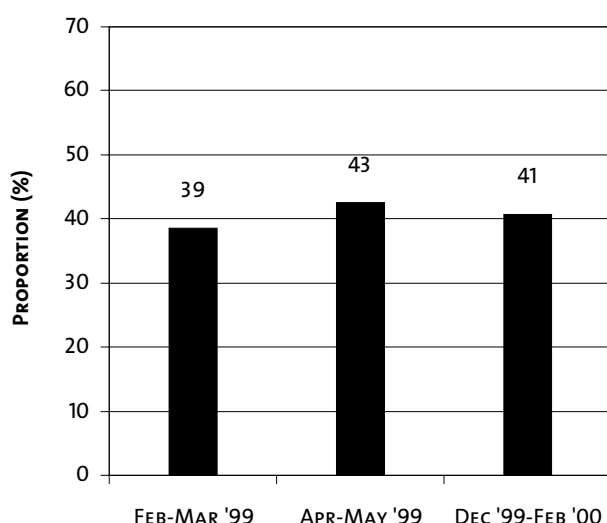
Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)



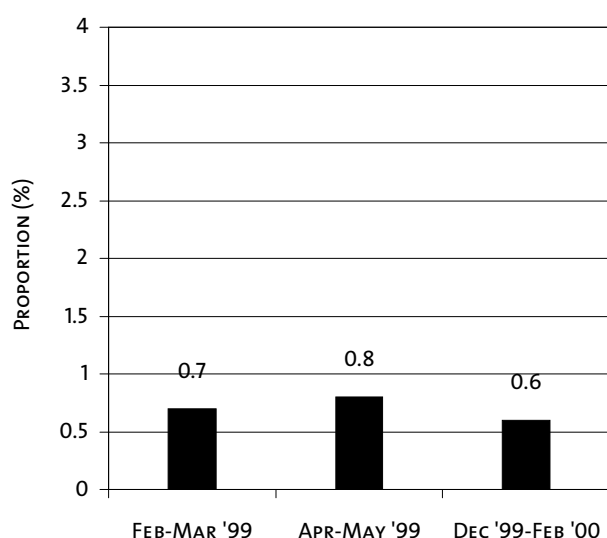
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *East Java* – The prevalence of wasting declined throughout 1999 and by the end of the year it was just above 10%.

#### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *East Java* – The prevalence of stunting was high and nearly stable throughout 1999.

#### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *East Java* – The prevalence of underweight was relatively high and almost the same throughout the year.



### Maternal diarrhea (see Fig 15)

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

Data collection method. Respondents were asked whether they suffered from diarrhea during the previous 7 days.

Findings. *General* – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *East Java* – The prevalence of diarrhea among mothers was relatively low.

### Child diarrhea, 12-23 months old (see Fig 16)

What is indicated. See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

Data collection method. Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

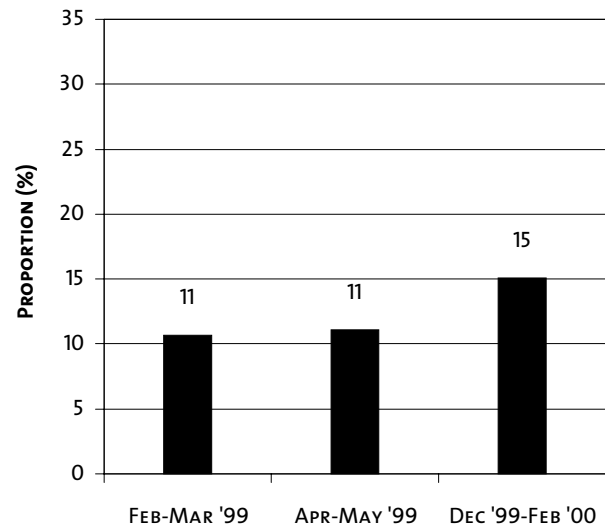
Findings. *General* – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *East Java* – One in every 7-10 children suffered from diarrhea during the week preceding the interview and prevalence increased toward the end of 1999.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children

Fig 16. Diarrhea among children aged 12-23 months in week prior to interview



(aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### East Java

In rural East Java, recovery from the crisis has clearly commenced. Compared to other NSS sites, the province performs average. Particular attention needs to be paid to the high prevalence of anemia among underfives, the relatively small proportion of households that uses iodized salt, the too early introduction of complementary food to infants, and to maintaining vitamin A capsule coverage among underfives and increasing it among 6-11 month old children and among mothers within one month after delivery.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in Surabaya**  
**Key results for the period: Jan 1999 – Feb 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for urban slums in Surabaya as collected in the period Jan 1999 – Feb 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. In Jakarta and Surabaya, the following steps were taken for their selection. First, *kelurahan* (or village-level administrative units) with slums were identified. Then, the particular *RW* (or hamlet/subvillage-level administrative unit) of the *kelurahan* with slums were identified, and 3-6 *RWs* were then randomly selected per *kelurahan*, to arrive at a total of 80 *RWs*. From each *RW*, 30 households were selected by systematic sampling. For the latter, each *RW* was asked to prepare a list of all households with underfives situated in a slum area (often, only part of the *RW* is a slum area), from which households were then selected based on an interval that was determined by the size of the *RW*. The total number of households selected from Surabaya per round of data collection was 2,400 (80 *RWs* x 30 households).

*Period of data collection*

Data reported here were collected in Surabaya in Jan-Mar 1999, Apr-May 1999, and Dec 1999-Feb 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

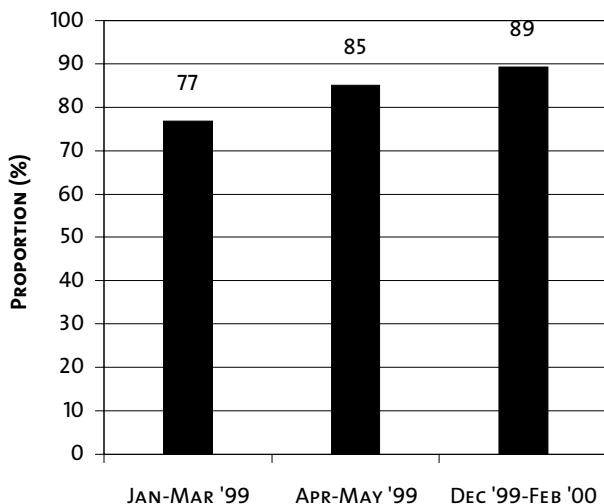
livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Surabaya, are described.



**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



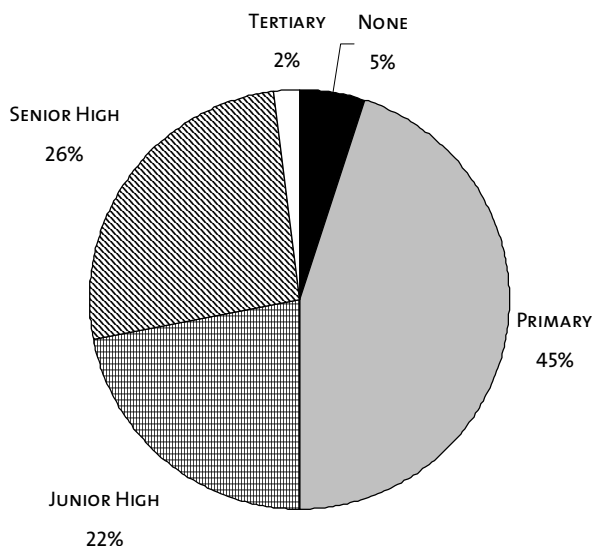
### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. General – In most NSS sites the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Surabaya* – The proportion of households that had adequately iodized salt was high and increased steadily throughout 1999.

**Fig 2. Mothers without formal education**



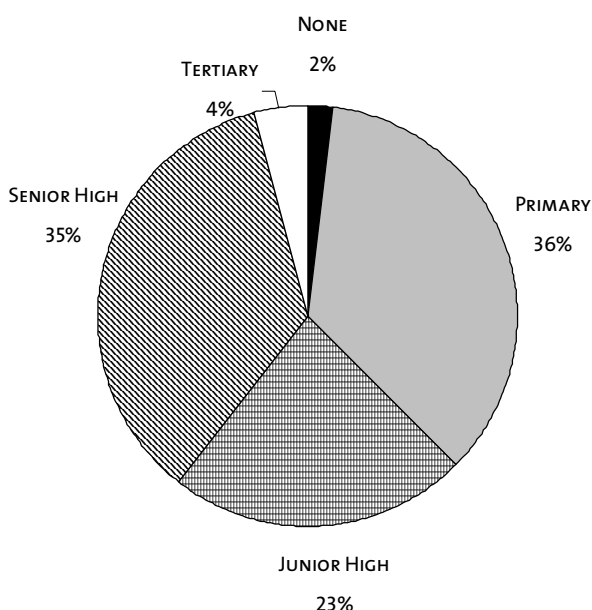
### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. General – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Surabaya* – The proportion of mothers without education was relatively low.

**Fig 3. Fathers without formal education**



### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. Data collection method (where more than one round is reported):

All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. General – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Surabaya* – The proportion of fathers without education was relatively low.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

**Data collection method.** Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *Surabaya* – The proportion of couples in Surabaya who practiced family planning was among the highest in the NSS sites.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *Surabaya* – Only 25-40% of infants younger than 4 months was exclusively breastfed.

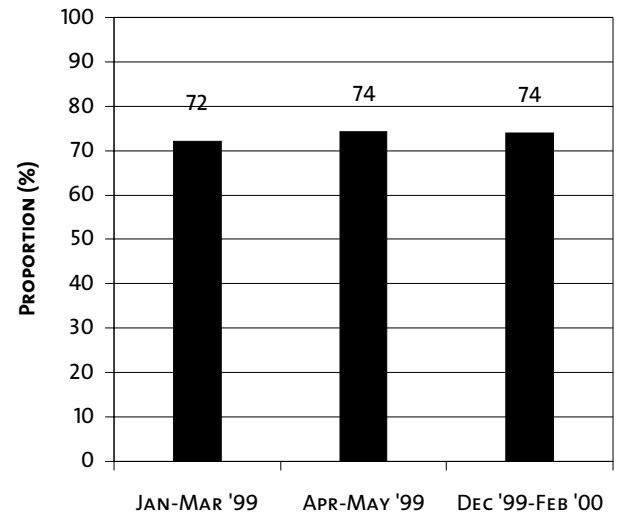
#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

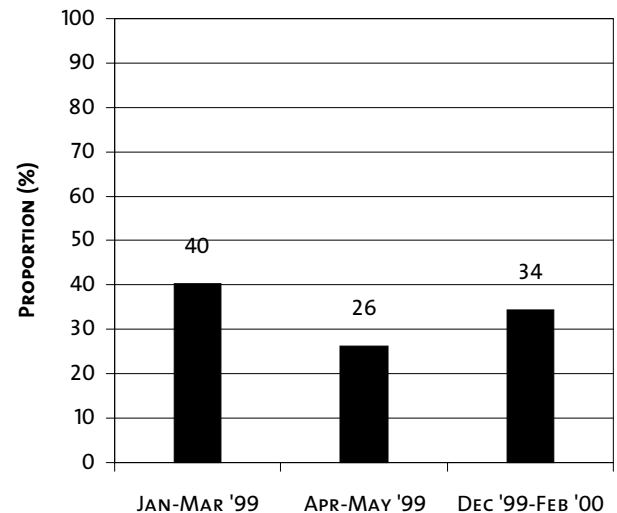
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%).

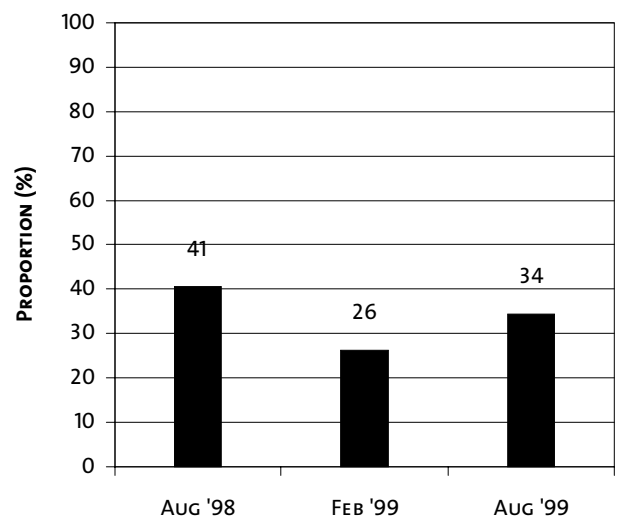
**Fig 4. Couples who practice family planning**



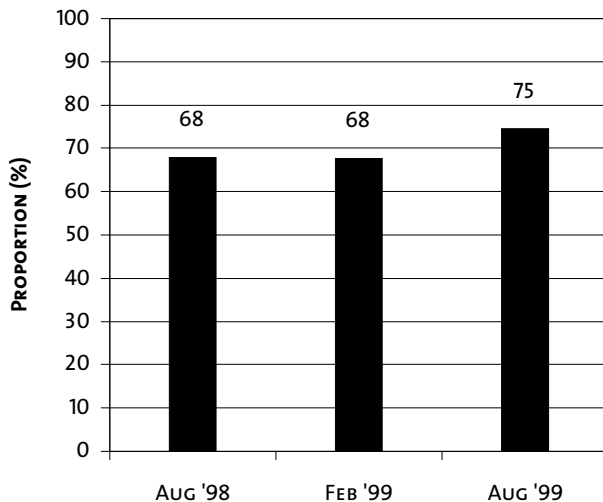
**Fig 5. Children younger than 4 months old exclusively breastfed**



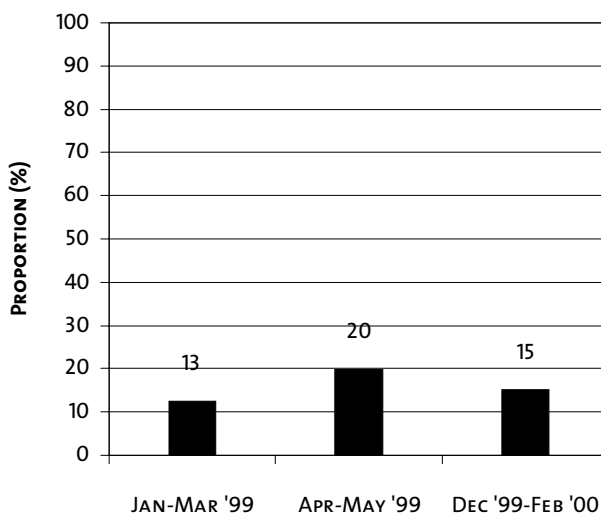
**Fig 6. VAC coverage among children aged 6-11 months, by distribution month**



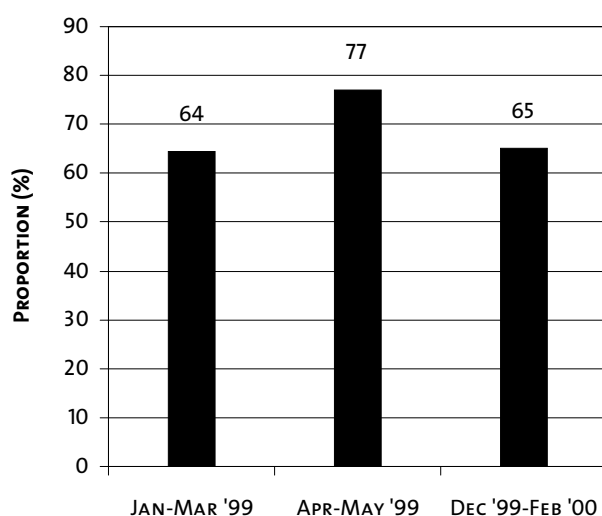
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



*Surabaya* – Coverage was average when compared to the other NSS sites and needs to be increased.

#### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Surabaya* – Coverage was relatively high and had increased by Aug 99.

#### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Surabaya* – Coverage among mothers was among the lowest observed.

#### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

**Findings. General** – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Surabaya* – Prevalence was amongst the highest observed.

#### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Surabaya* – Prevalence was relatively high and did not decrease very much in the second half of 1999.

#### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

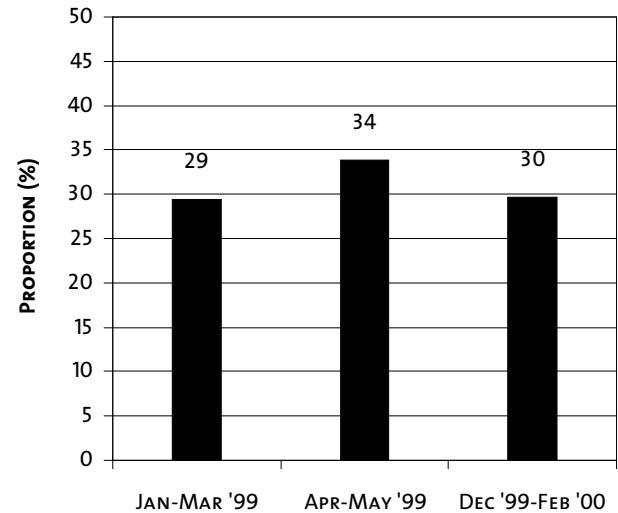
**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Surabaya* – Prevalence of maternal wasting was high early 1999, but had already decreased by Apr-May.

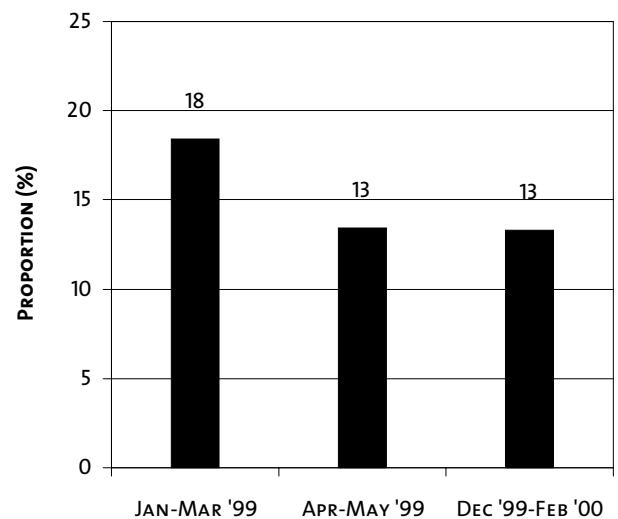
#### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well

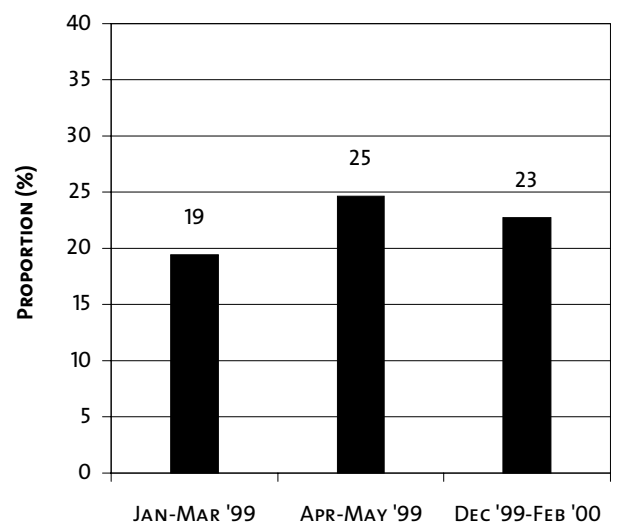
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



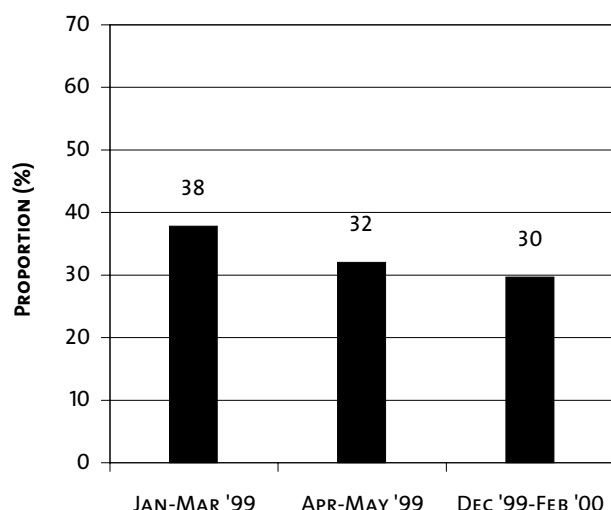
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



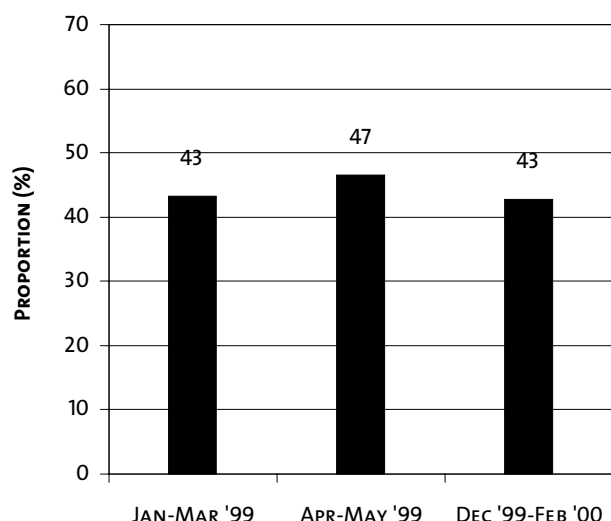
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



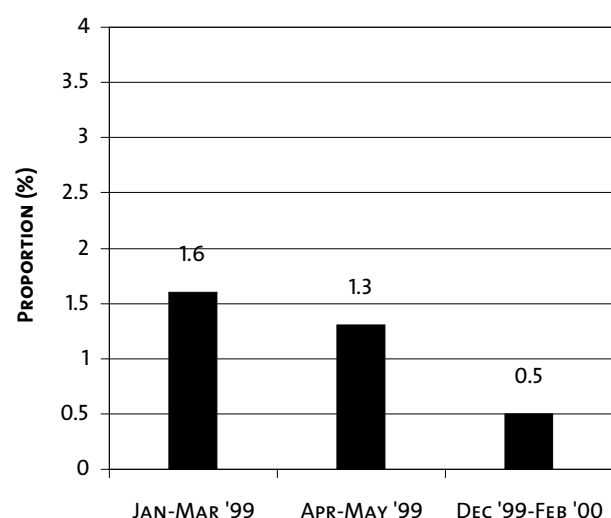
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). **Surabaya** – The prevalence of wasting was very high and it only decreased slightly between May and Dec 1999.

### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. **Surabaya** – The prevalence of stunting showed a steady decline and was among the lowest observed, but still relatively high, indicating that the quality of the diet is relatively poor (low micronutrient content).

### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of



prevalences found: 32-60%. *Surabaya* – The prevalence of underweight was relatively high, mainly due the high prevalence of wasting.

### Maternal diarrhea (see Fig 15)

**What is indicated.** Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *Surabaya* – The prevalence of diarrhea among mothers declined steadily throughout 1999.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

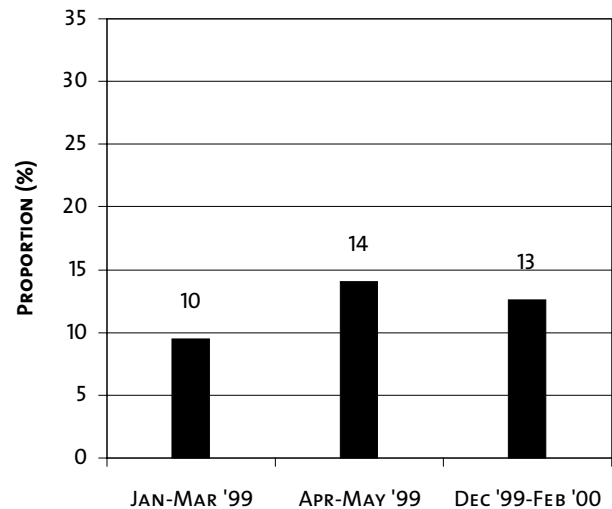
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *Surabaya* – One in every 7-10 children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems has started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Surabaya

In the urban slums of Surabaya, recovery from the crisis has commenced. Particular attention needs to be paid to the high prevalence of anemia among underfive children and women, too early cessation of exclusive breastfeeding, and the relatively low coverage of vitamin A capsules among children aged 6-11 months and among mothers within one month after delivery.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

Nutrition Surveillance in Semarang  
Key results for the period: Feb – Oct 1999

In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for urban slums in Semarang as collected in the period Feb-Oct 1999.

*Selection of households*

For each round of data collection, a new sample of households was selected. In Semarang and Makassar, the following steps were taken for the selection of households from slum areas. RWs (or hamlet/subvillage-level administrative unit) with slums were identified, from which 80 were then randomly selected. An RW is the smallest administrative area for which census data are available and has an average population of 3,000-5,000. Then, from each RW, 30 households were selected by systematic sampling. For the latter, each RW was asked to prepare a list of all households with underfive children situated in a slum area (often, only part of the RW is a slum area), from which households were then selected based on an interval that was determined by the size of the RW. The total number of households selected from Semarang per round of data collection was 2,400 (80 RWs x 30 households).

*Period of data collection*

Data reported here were collected in Semarang in Feb 1999, Apr 1999, and Sept-Oct 1999.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

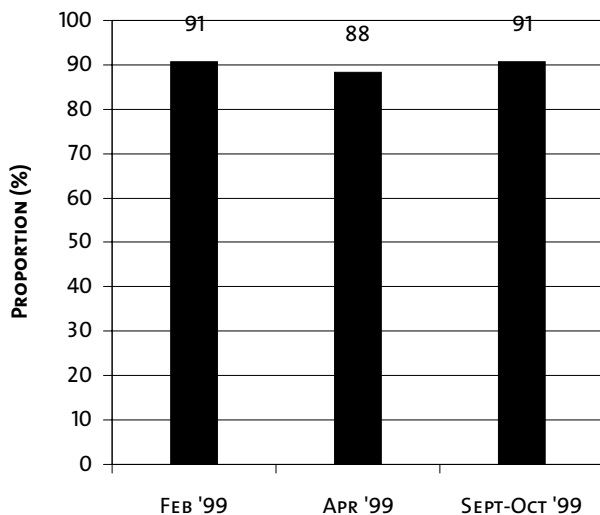
livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

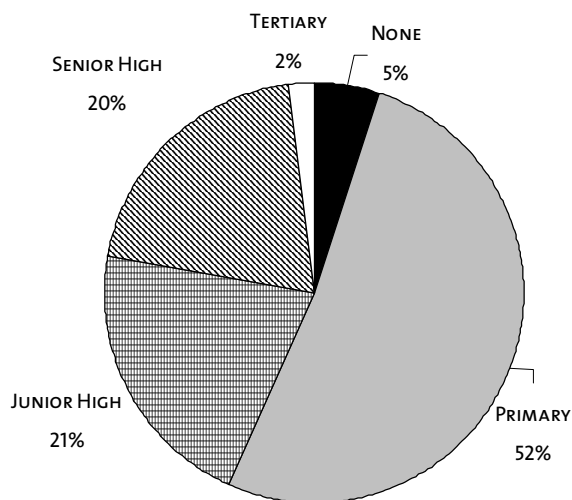
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Semarang, are described.



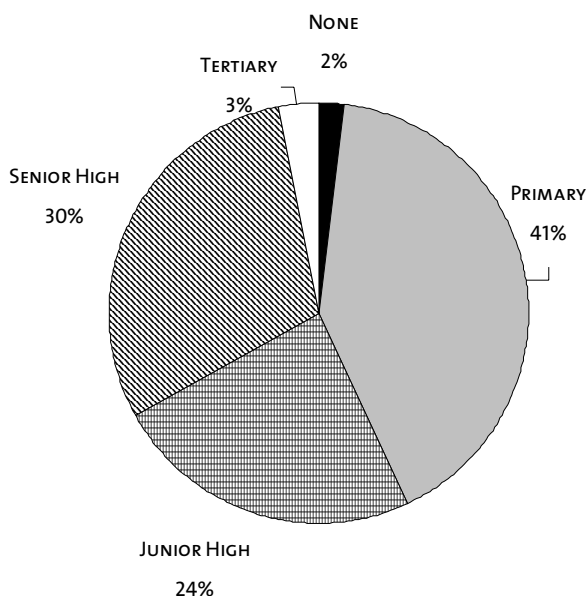
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Semarang* – The proportion of households with adequately iodized salt was very high and stable throughout 1999.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Semarang* – The proportion of mothers without education was among the lowest observed.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Semarang* – The proportion of fathers without education was the lowest observed.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. **Semarang** – The proportion of couples in Semarang that practiced family planning was among the highest observed.

#### **Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)**

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. **Semarang** – The proportion of infants younger than 4 months of age that was exclusively breastfed was among the lowest observed.

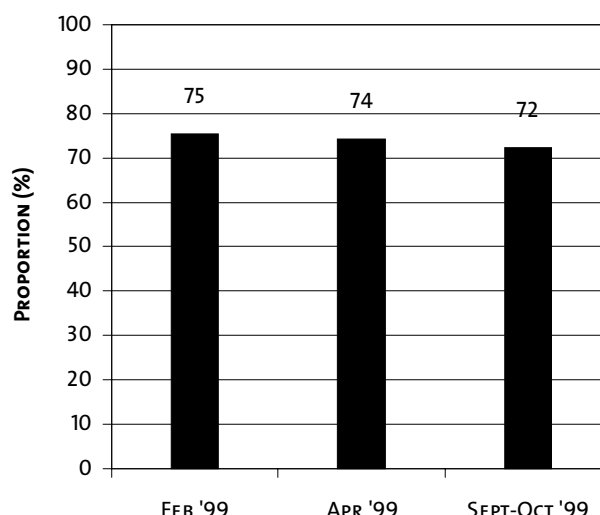
#### **Vitamin A capsule receipt among children 6-11 months old (see Fig 6)**

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

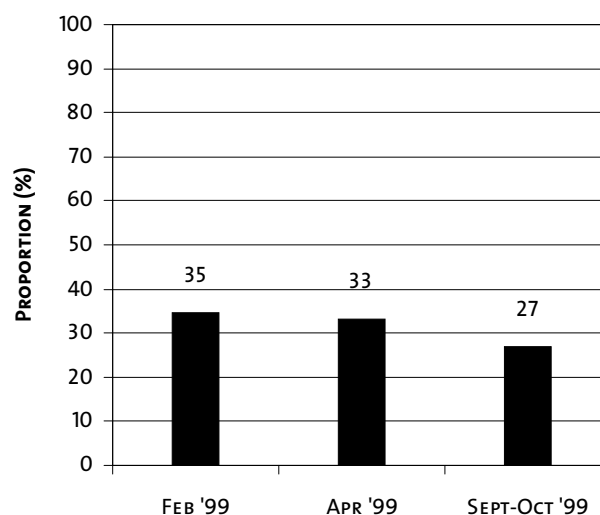
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). **Semarang** – Coverage was low, but nearly doubled between Feb and Aug 99.

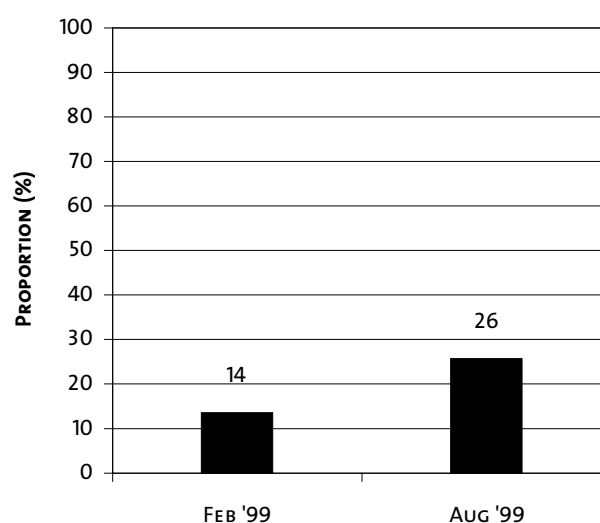
**Fig 4. Couples who practice family planning**



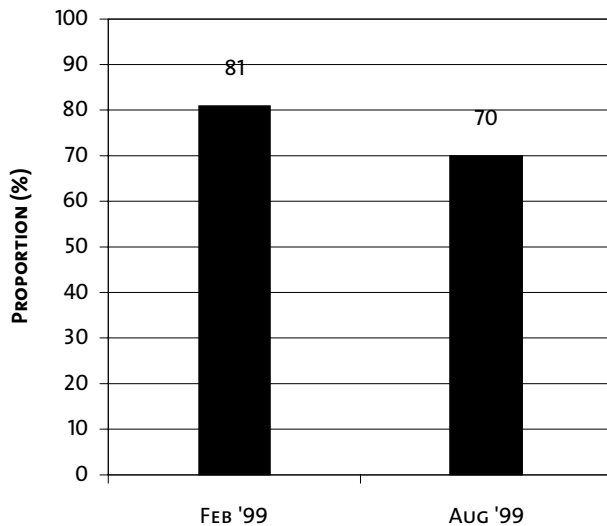
**Fig 5. Children younger than 4 months old exclusively breastfed**



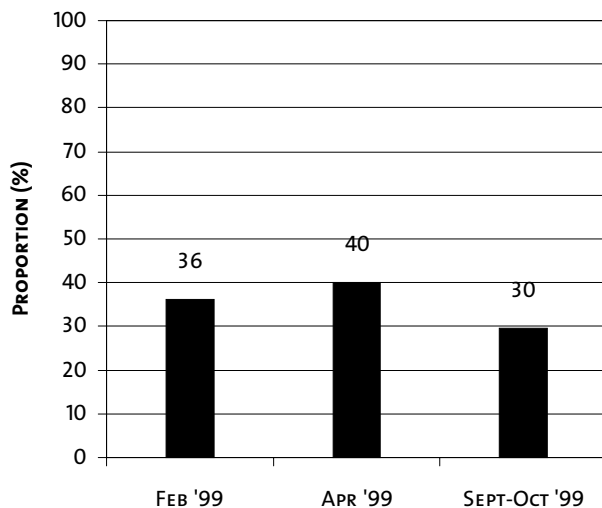
**Fig 6. VAC coverage among children aged 6-11 months, by distribution month**



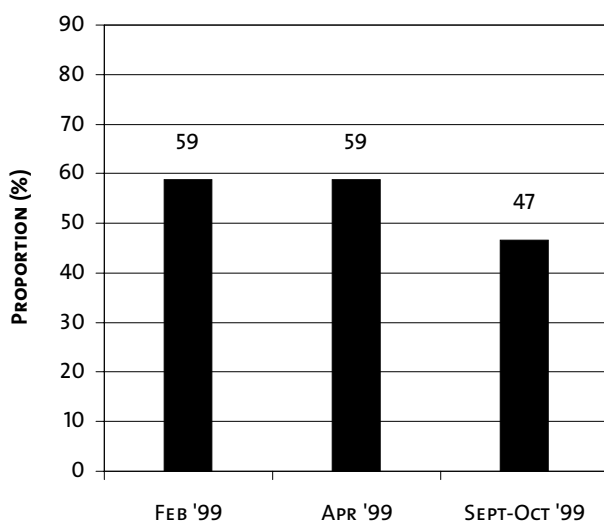
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Semarang* – In Feb '99, coverage was the highest observed, but it was much lower in Aug '99.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Semarang* – Coverage was among the highest observed, but seems to be declining.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year.

However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Semarang* – Although prevalence was among the lowest observed, it was still very high.

### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Semarang* – Prevalence was relatively low, but contrary to what was observed in other NSS sites, it increased between mid and late 1999.

### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

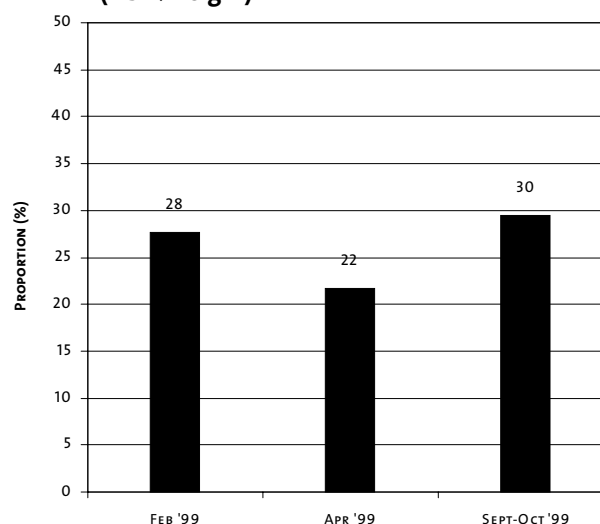
Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Semarang* – In late 1998 and early 1999 prevalence was relatively high, but it decreased towards the end of 1999.

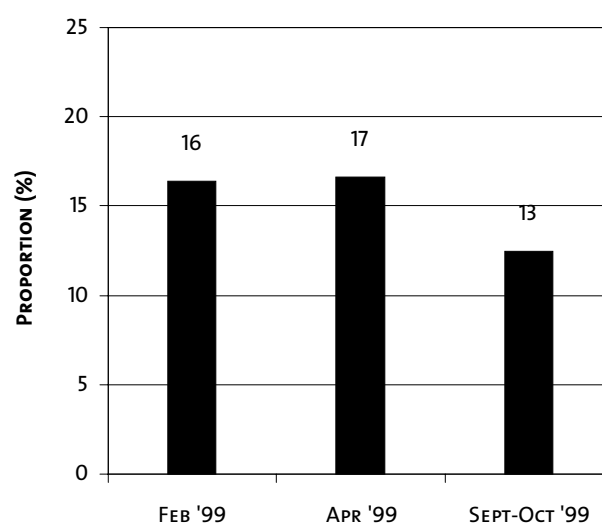
### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

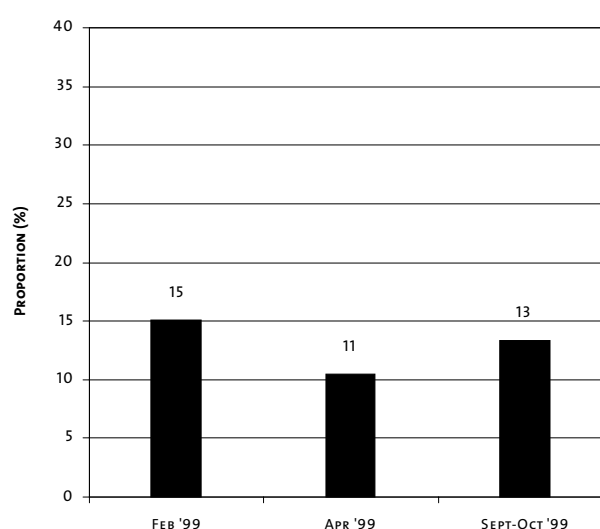
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



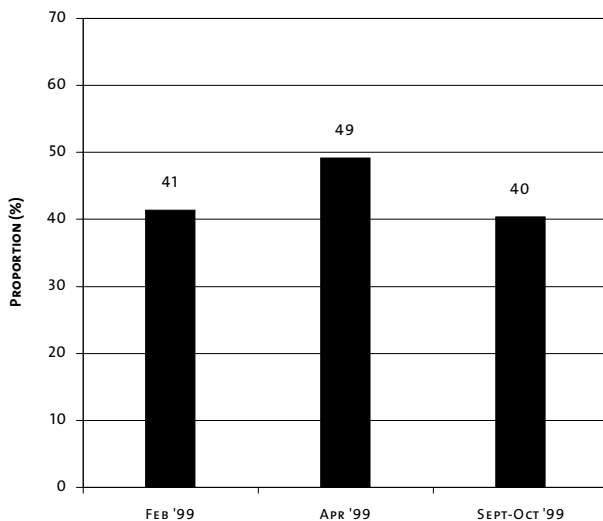
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



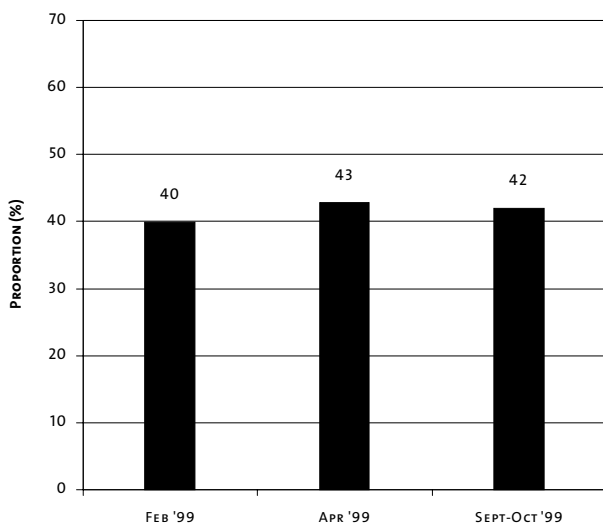
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



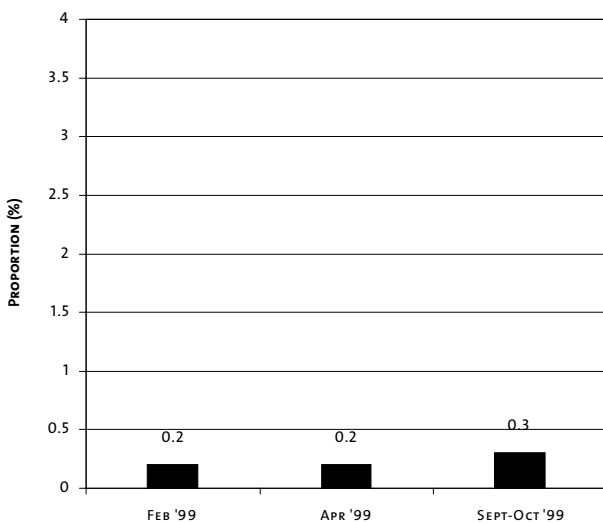
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *Semarang* – The prevalence of wasting among children was relatively low, but it increased in the second half of 1999.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *Semarang* – The prevalence of stunting was relatively high, especially when compared to that in the slums of Jakarta and Surabaya, but might be declining.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *Semarang* – The prevalence of underweight was relatively low when compared to other NSS sites, but in absolute terms it was high.



### Maternal diarrhea (see Fig 15)

**What is indicated.** Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **Semarang** – The prevalence of diarrhea was among the lowest observed.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

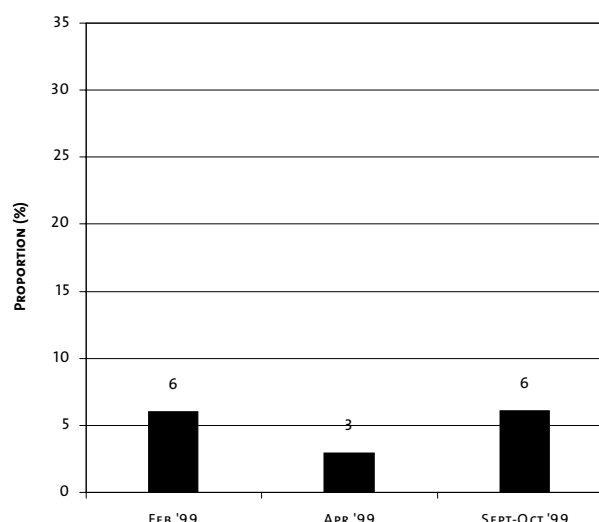
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. **Semarang** – The prevalence of child diarrhea was low.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Semarang

In Semarang, the impact of the crisis has been limited, especially when compared to other urban slum areas. There was a slight increase of wasting among children and anemia among mothers between mid and late 1999 and data collected in 2000 should show whether that was just temporary or whether it has continued. The main areas that need attention are the maintenance of good coverage of high-dose vitamin A capsules among all target groups, reducing the prevalence of anemia among underfives, and encouraging and enabling mothers to exclusively breastfed infants up to the age of 4-6 months.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in Lombok**  
**Key results for the period: Feb 1999 – Feb 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for Lombok as collected in the period Feb 1999 – Feb 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of Lombok was divided into three ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from Lombok per round of data collection was 3600 (3 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in Lombok in Feb-Mar 1999, Apr-May 1999, and Dec 1999-Feb 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and

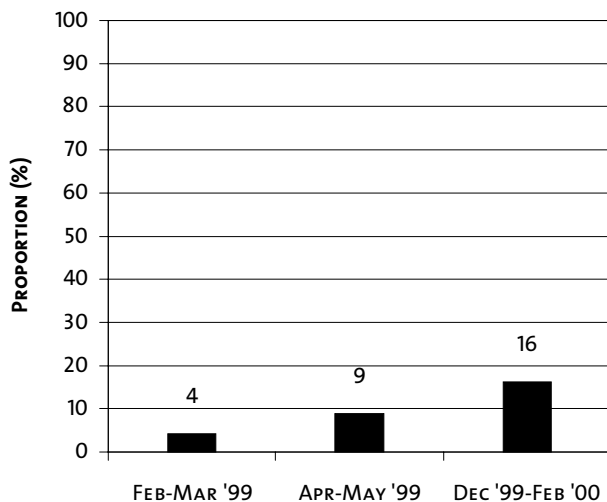
livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

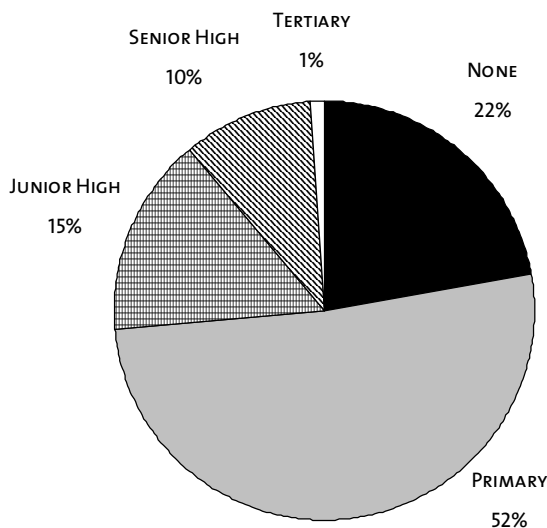
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, and Lampung, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Lombok, are described.



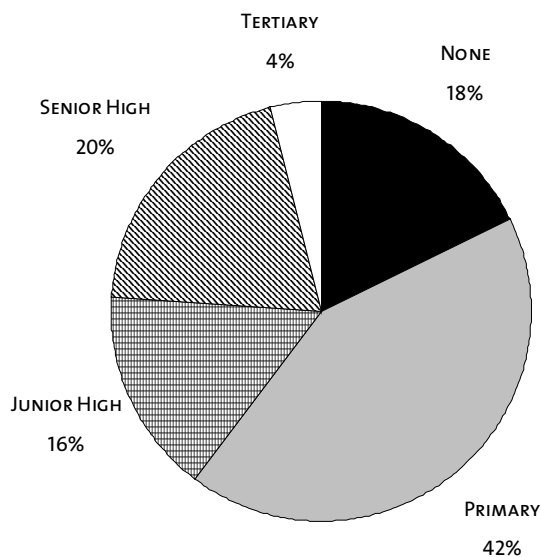
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

**What is indicated.** Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

**Data collection method.** The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

**Findings. General** – In most NSS sites the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). **Lombok** – The proportion of households with adequately iodized salt was very low, but by the end of 1999 it was nearly 4 times higher than in the beginning of the year.

### Mothers without formal education (see Fig 2)

**What is indicated.** Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

**Data collection method.** All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

**Findings. General** – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. **Lombok** – The proportion of mothers without education was the highest of all the NSS sites.

### Fathers without formal education (see Fig 3)

**What is indicated.** See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

**Data collection method.** All mothers were asked how many years of education their husbands had completed, from which the proportion without formal education was calculated.

**Findings. General** – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. **Lombok** – The proportion of fathers without education was the highest of all the NSS sites.

### Family planning (see Fig 4)

**What is indicated.** Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked whether she and her husband were currently practicing family planning.

Findings. General – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *Lombok* – The proportion of couples in Lombok that practiced family planning was high.

#### Exclusive breastfeeding of infants younger than 4 months (see Fig 5)

What is indicated. It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

Data collection method. The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

Findings. General – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *Lombok* – The proportion of infants younger than 4 months that was exclusively breastfed was relatively high, but it decreased throughout the year.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

What is indicated. Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

Data collection method. Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

Findings. General – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *Lombok* – Coverage in Aug 99 was among the highest, but it still has to be increased.

Fig 4. Couples who practice family planning

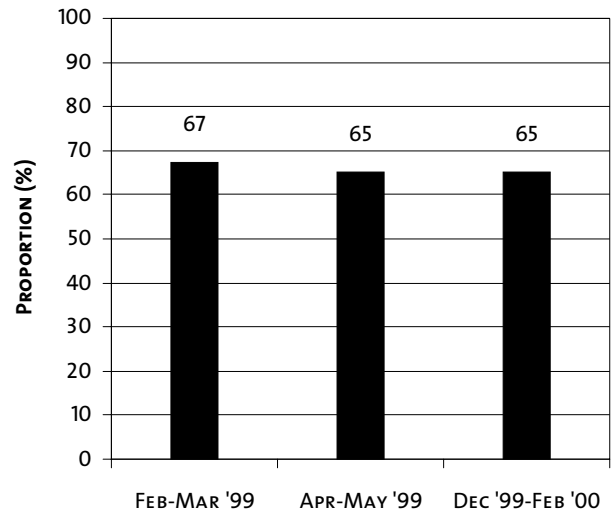


Fig 5. Children younger than 4 months old exclusively breastfed

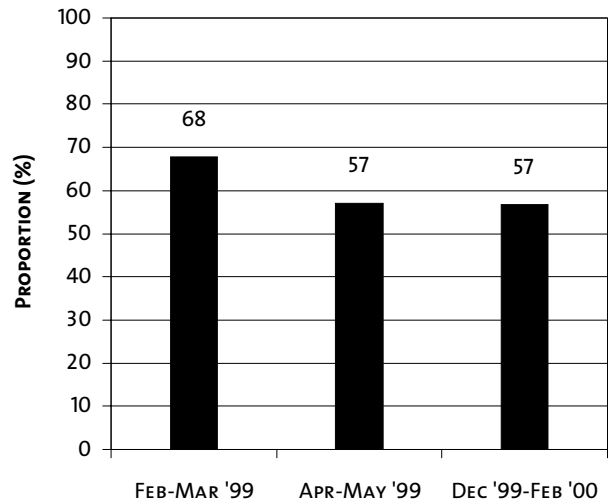
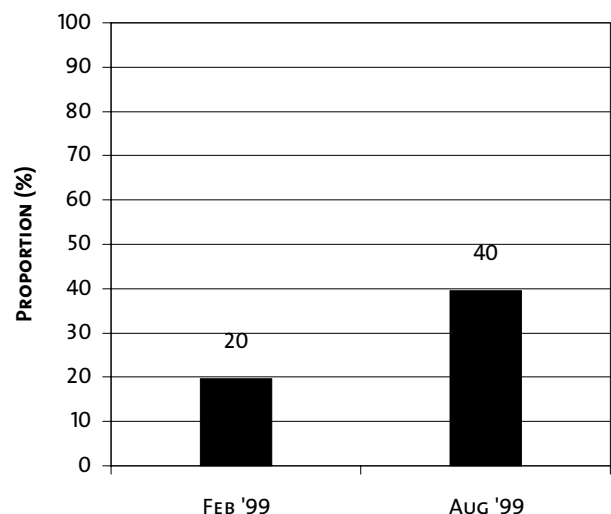
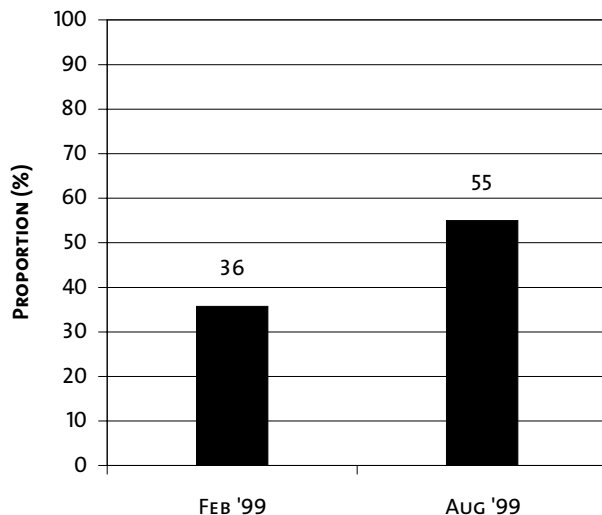


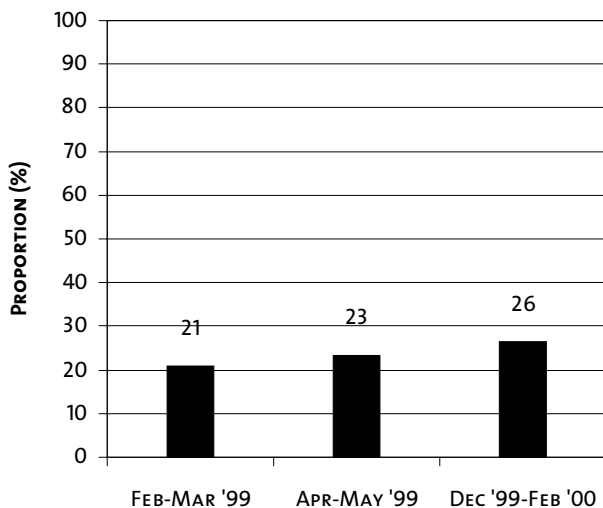
Fig 6. VAC coverage among children aged 6-11 months, by distribution month



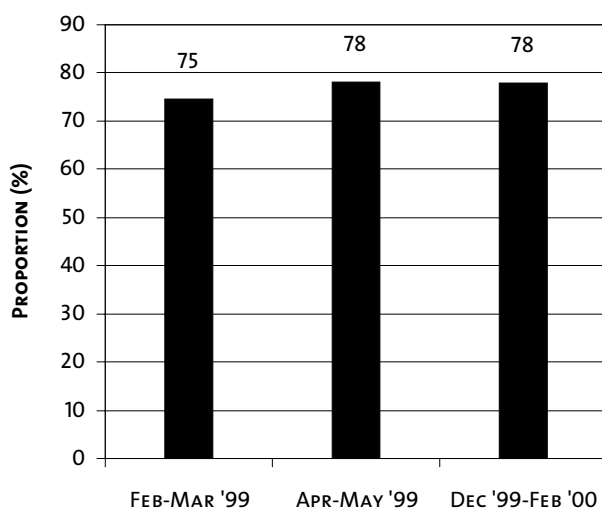
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Lombok* – Coverage was much higher in Aug '99 than in Feb '99, due to better stock management, but it was still relatively low.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Lombok* – Coverage increased steadily through 1998-1999 and was average when compared to other NSS sites.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban

and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Lombok* – The prevalence is very high and remained more or less the same throughout 1999.

### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Lombok* – Prevalence decreased in the second half of 1999 and was only slightly higher than before the onset of the crisis.

### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

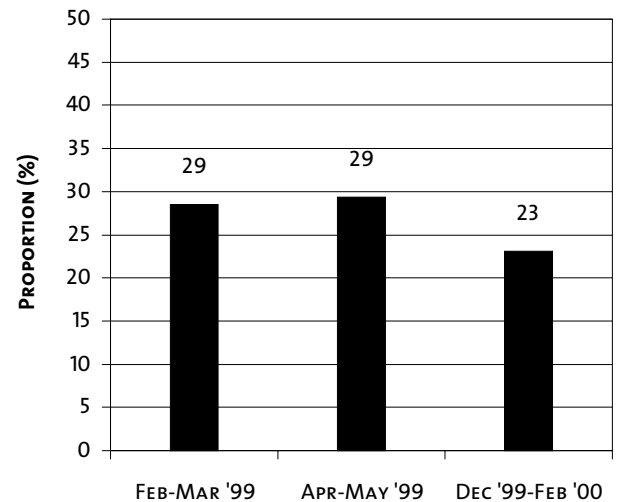
**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Lombok* – Prevalence of maternal wasting increased, rather than decreased, towards the end of 1999 and was then the highest among all NSS sites.

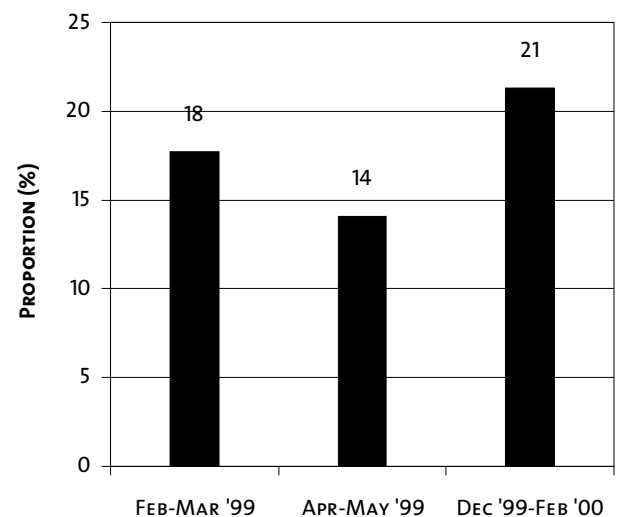
### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well

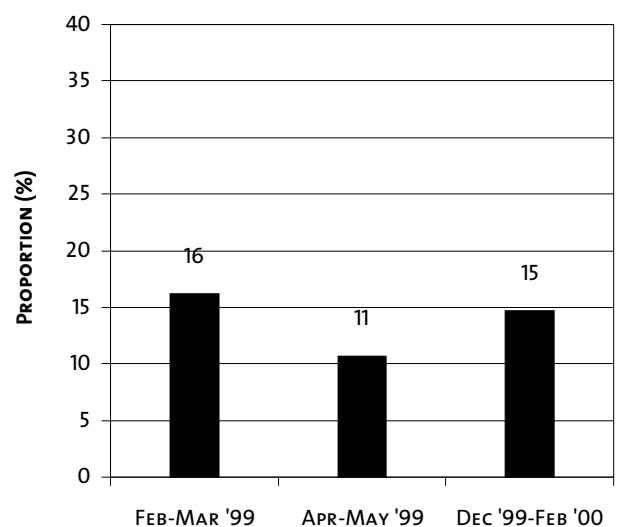
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



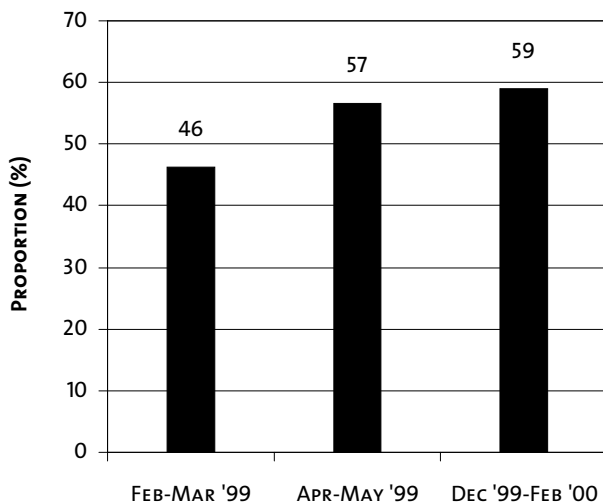
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



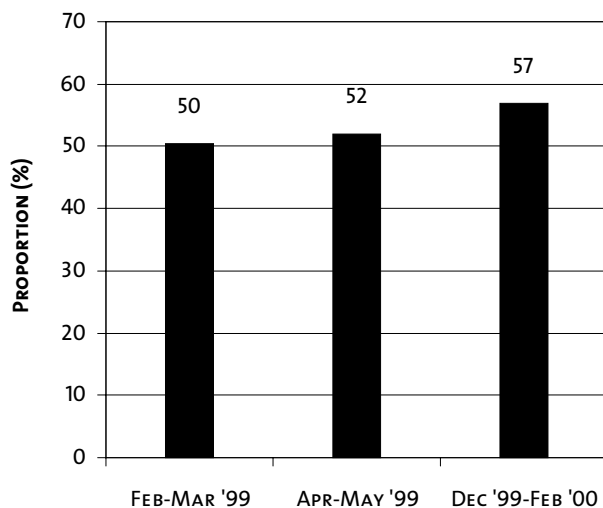
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



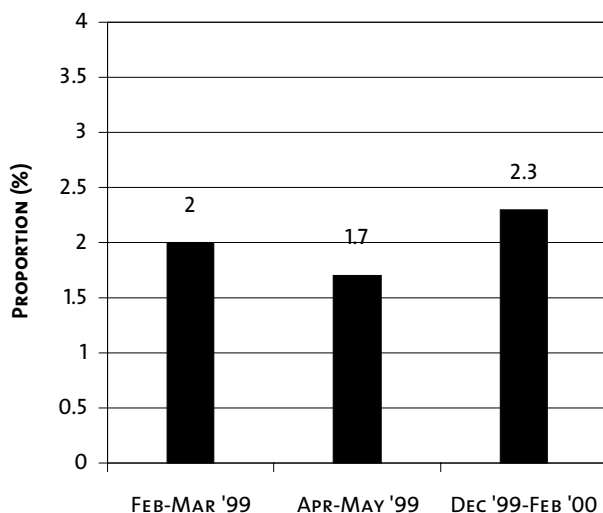
**Fig 13. Stunting among children aged 12-23 months (HAZ < -2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ < -2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

**Data collection method.** Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). **Lombok** – The prevalence of wasting among children showed the same trend as that among mothers, an increase in the second half of 1999.

#### **Child stunting, 12-23 months old (see Fig 13)**

**What is indicated.** Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

**Data collection method.** Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. **Lombok** – The prevalence of stunting was very high, the highest among all NSS sites, and it increased throughout 1999.

#### **Child underweight, 12-23 months old (see Fig 14)**

**What is indicated.** Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

**Data collection method.** Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

**Findings. General** – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. **Lombok** – The prevalence of underweight was very high and also



increased throughout the year.

### Maternal diarrhea (see Fig 15)

**What is indicated.** Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions. **Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **Lombok** – The prevalence of diarrhea was high, particularly when compared to the other rural NSS sites.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

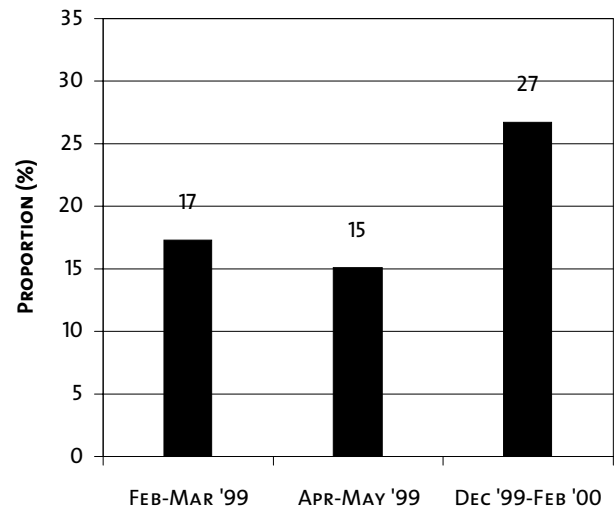
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. **Lombok** – The prevalence of diarrhea was among the highest in the NSS sites.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Lombok

In Lombok, signs of a recovery from the crisis are not yet very clear, as prevalence of both wasting and diarrhea, among mothers as well as children, increased towards the end of the year and anemia prevalence decreased only among mothers. Lombok is clearly one of the 'worst off' among the NSS sites. Both quantity and quality of the diet need to be improved. For the latter vitamin/mineral supplements might be the best shorter term option. In addition,



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in Makassar**  
**Key results for the period: Feb – May 1999**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for slums areas of Makassar as collected in the period Feb – May 1999.**

*Selection of households*

For each round of data collection a new sample of households is selected. In Semarang and Makassar, the following steps are taken for the selection of households from slum areas. RWs (or hamlet/subvillage-level administrative unit) with slums are identified, from which 80 are then randomly selected. An RW is the smallest administrative area for which census data are available and has a population of 3,000-5,000. Then, each RW is asked to prepare a list of all households with underfives that are situated in a slum area (often, only part of the RW is a slum area), from which 30 households are then selected by systematic sampling. The total number of households selected from Makassar per round of data collection is 2,400 (80 RWs x 30 households).

*Period of data collection*

Data reported here were collected in Makassar in Feb-Mar 1999 and Apr-May 1999.

*Data collected*

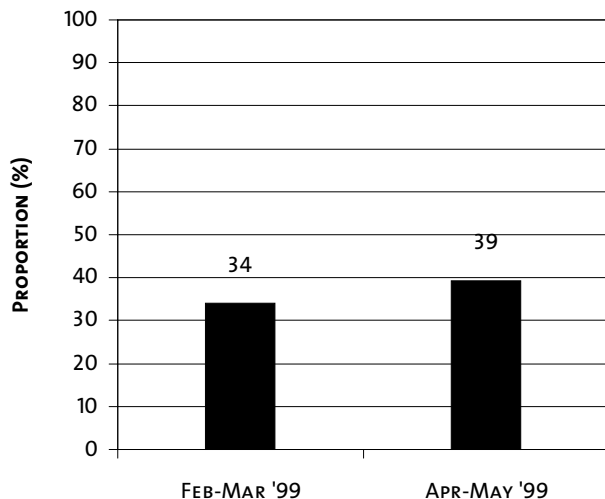
Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional

knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

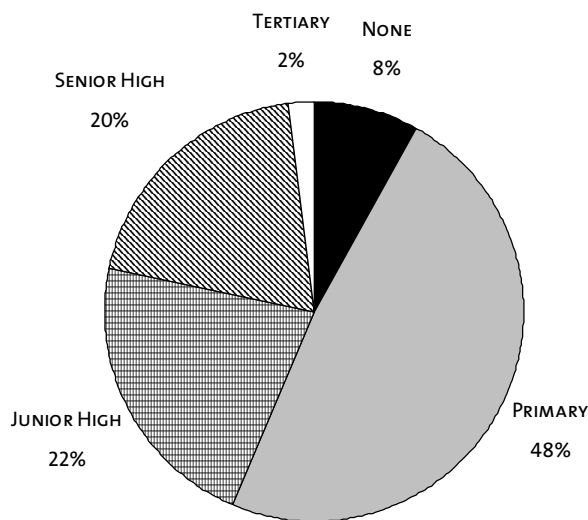
*Findings presented*

In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, and the four largest cities in West Sumatra. Note that in Makassar, data were only collected in the first half of 1999, while for all other areas data were also collected toward the end of 1999 to early 2000. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Makassar, are described.

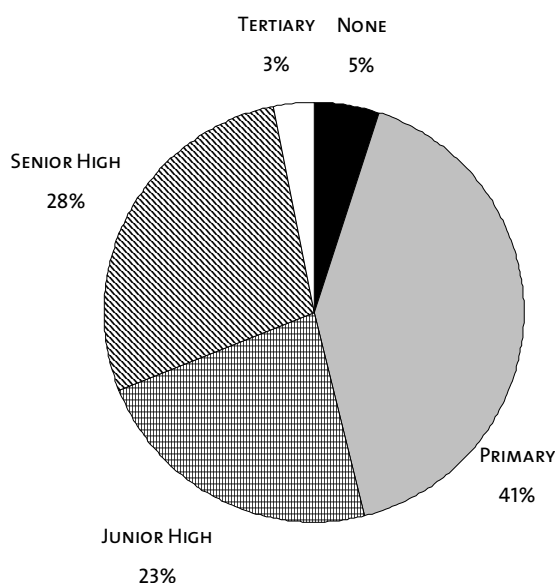
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Makassar* – The proportion of households with adequately iodized salt was relatively low, but increased during the first half of 1999.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Makassar* – The proportion of mothers without education was relatively high.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed. For analysis, data from all rounds were pooled together.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Makassar* – The proportion of fathers without education was relatively high.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. **Makassar** – The proportion of couples in Makassar that practiced family planning was the lowest observed.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. **Makassar** – The proportion of infants younger than 4 months that was exclusively breastfed was the highest observed, but may be declining.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). **Makassar** – Coverage was average, when compared to other NSS sites, but needs to be increased.

Fig 4. Couples who practice family planning

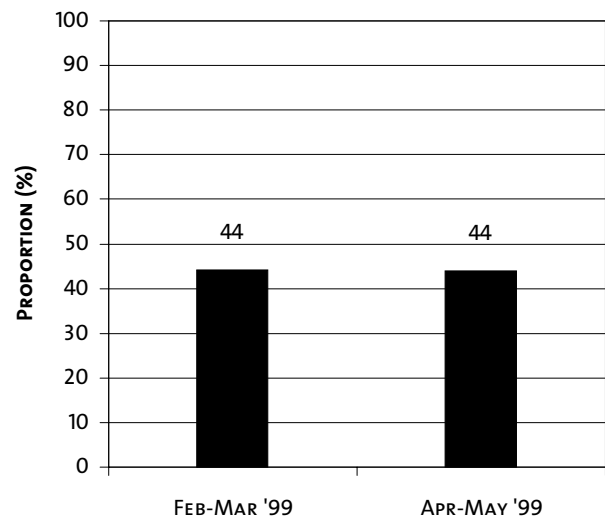


Fig 5. Children younger than 4 months old exclusively breastfed

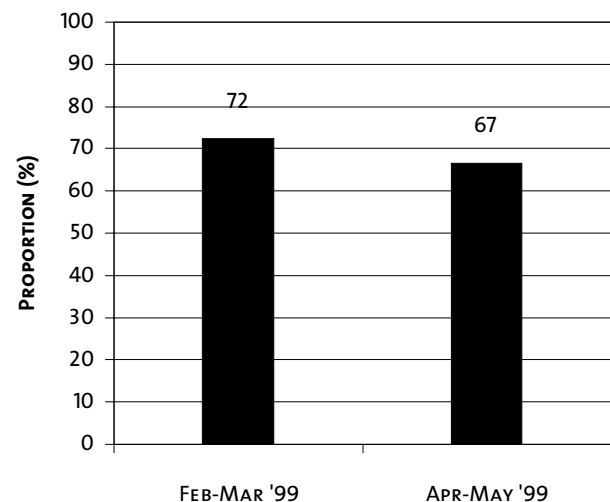
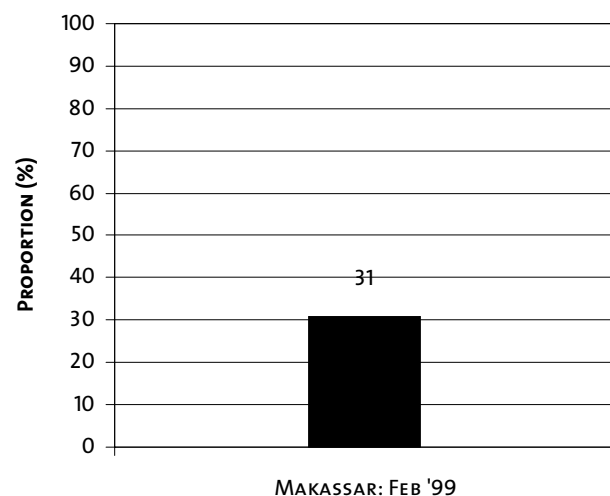
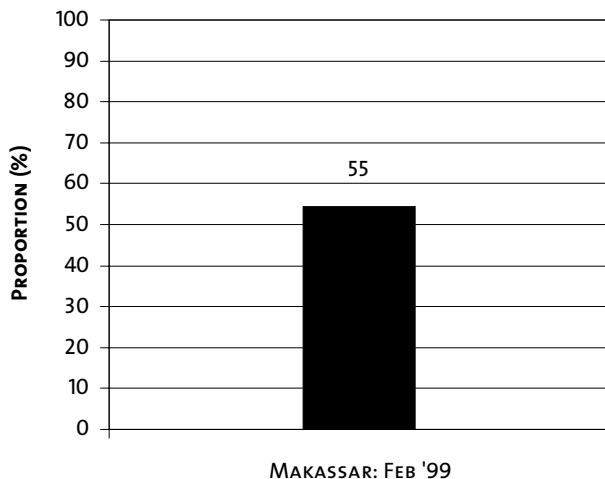


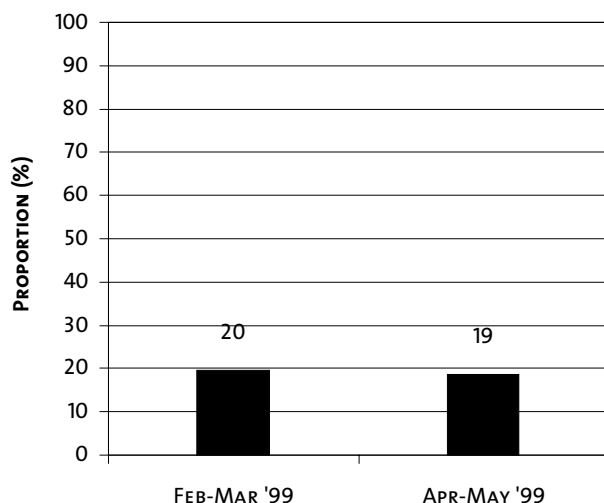
Fig 6. VAC coverage among children aged 6-11 months in Feb 1999



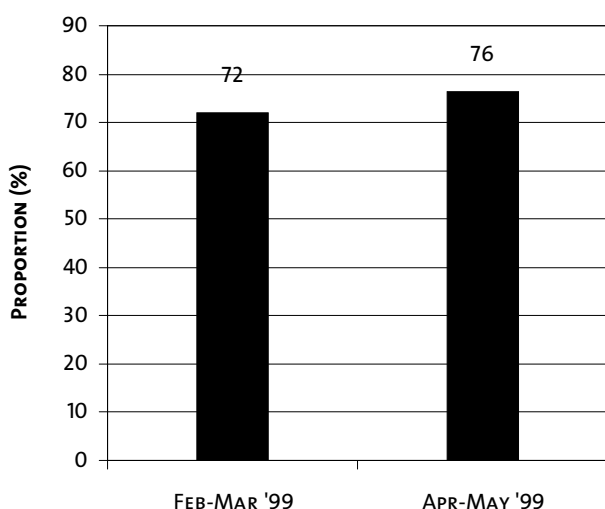
**Fig 7. VAC coverage among children aged 12-59 months in Feb 1999**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Makassar* – Coverage was among the lowest observed and needs to be increased.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Makassar* – Coverage was low.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year.

However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Makassar* – Prevalence was very high. Data about the situation by mid-2000, which was the subsequent round of data collection in Makassar, will soon become available.

### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Makassar* – Prevalence was relatively low and almost comparable to pre-crisis levels.

### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

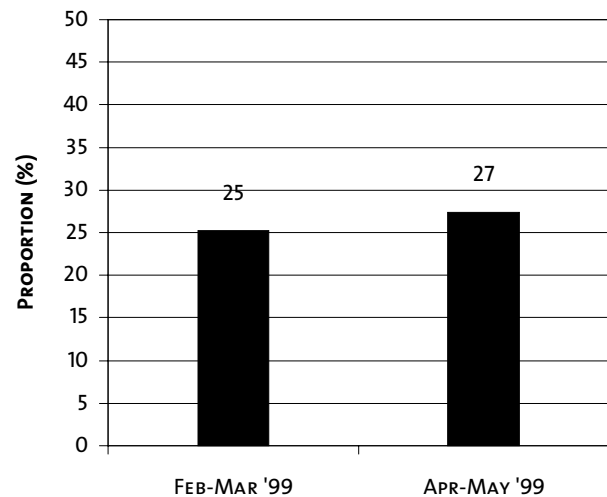
**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Makassar* – Prevalence was among the highest observed.

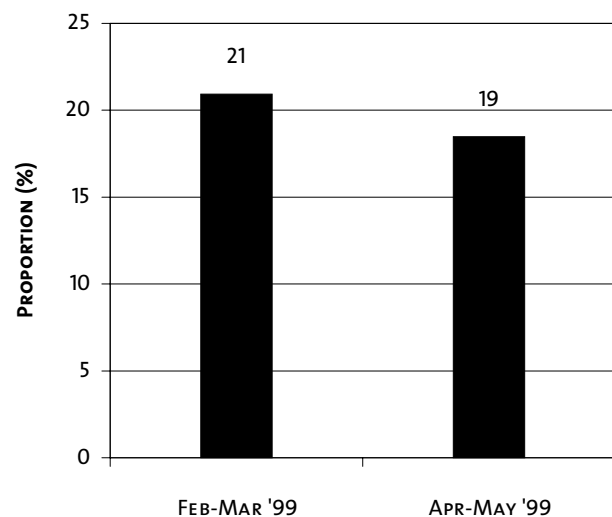
### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

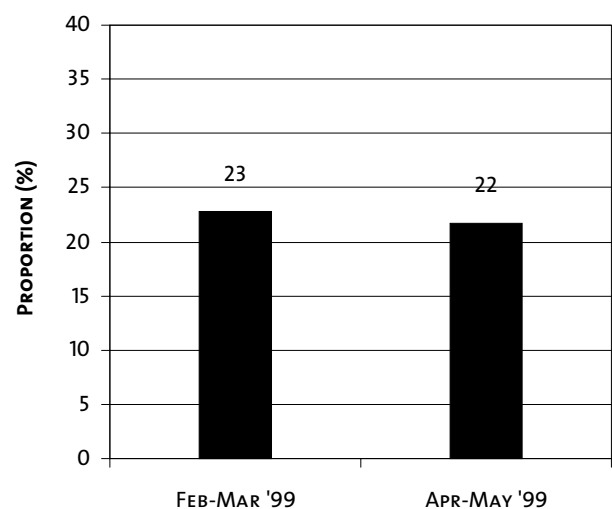
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



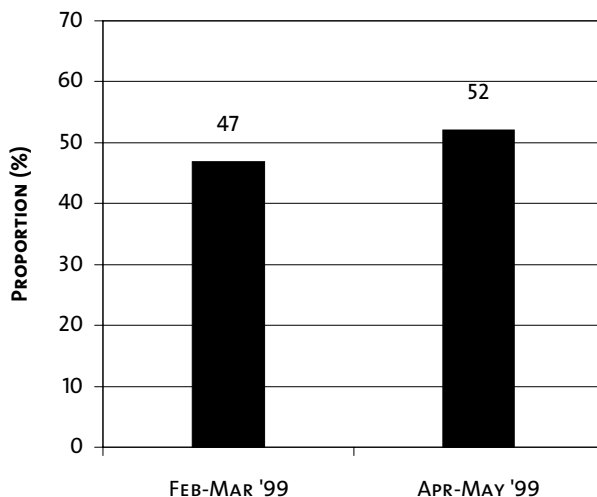
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



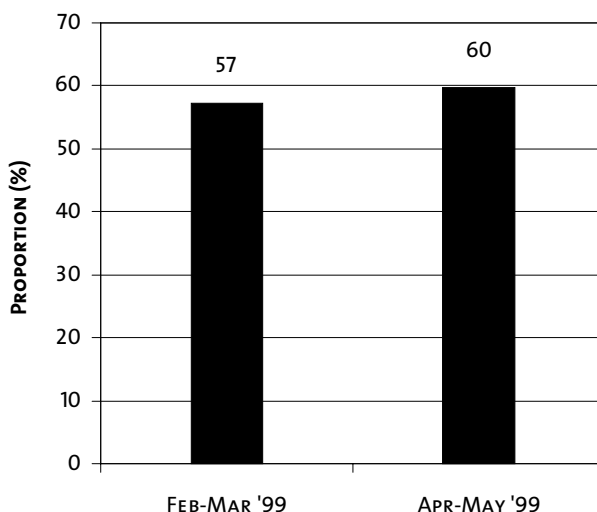
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



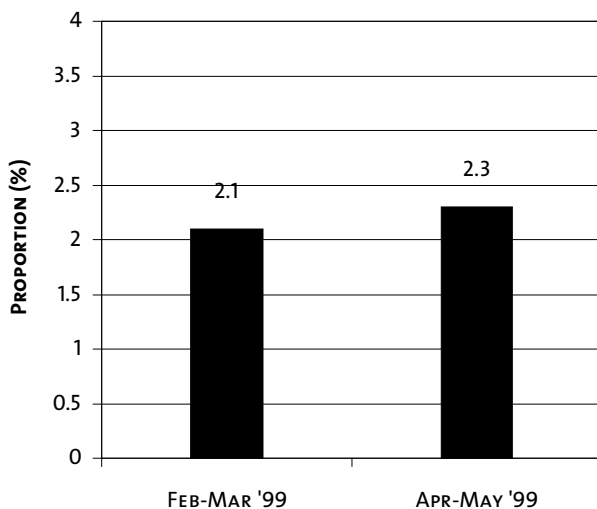
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *Makassar* – Prevalence of wasting among children was high.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among NSS sites indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *Makassar* – The prevalence of stunting was very high and even seemed to increase between Feb-Mar and Apr-May 1999.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *Makassar* – The prevalence of underweight was the highest observed, due to the high prevalence of both wasting and stunting.



### Maternal diarrhea (see Fig 15)

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

Data collection method. Respondents were asked whether they suffered from diarrhea during the previous 7 days.

Findings. *General* – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *Makassar* – The prevalence of diarrhea was relatively high.

### Child diarrhea, 12-23 months old (see Fig 16)

What is indicated. See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

Data collection method. Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

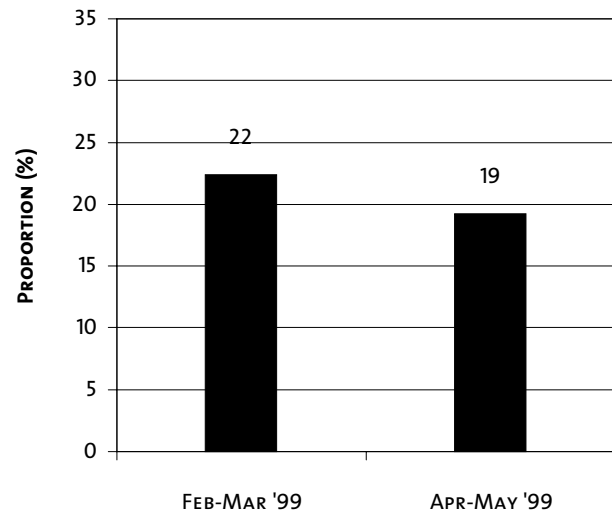
Findings. *General* – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *Makassar* – The prevalence of child diarrhea was very high, 1 in every 5 suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has

Fig 16. Diarrhea among children aged 12-23 months in week prior to interview



increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Makassar

Most indicators, particularly wasting among mothers and children and anemia among children, show a severe situation in Makassar in early 1999. Also, availability of iodized salt and coverage of vitamin A capsules among all groups were relatively low. Exclusive breastfeeding should be maintained at high levels observed early 1999. Data collected in Apr-June and July-Sept 2000 should show whether the situation has improved.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

## Nutrition Surveillance in West Sumatra

Key results for the period: Sept – Nov 1999

In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for West Sumatra as collected during the first round of data collection, Sept – Nov 1999.

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of West Sumatra was divided into five ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from West Sumatra per round of data collection was 6000 (5 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in West Sumatra in Sept-Nov 1999.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and

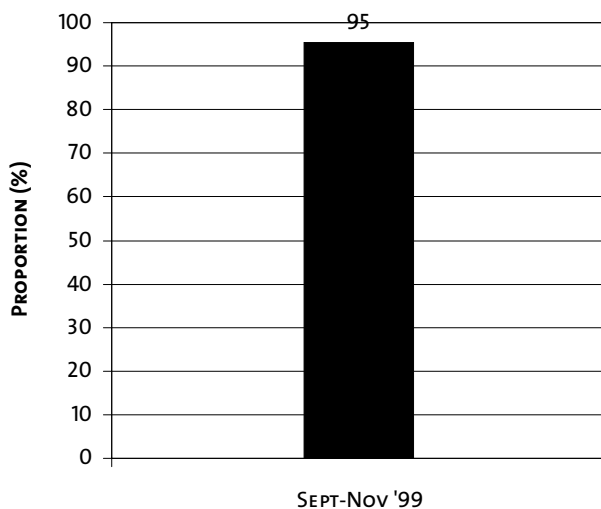
consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

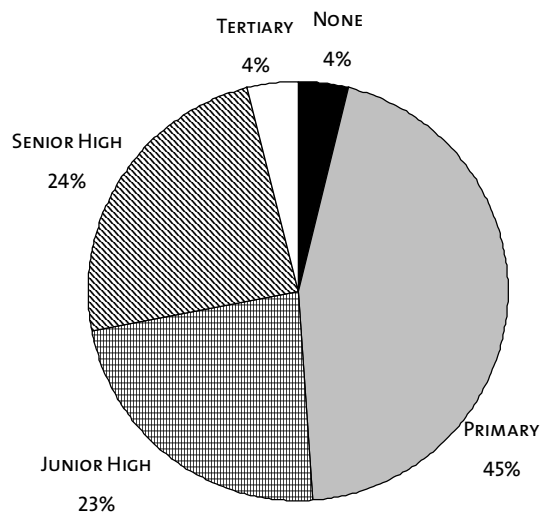
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, South Sulawesi, Lampung, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in West Sumatra, are described.



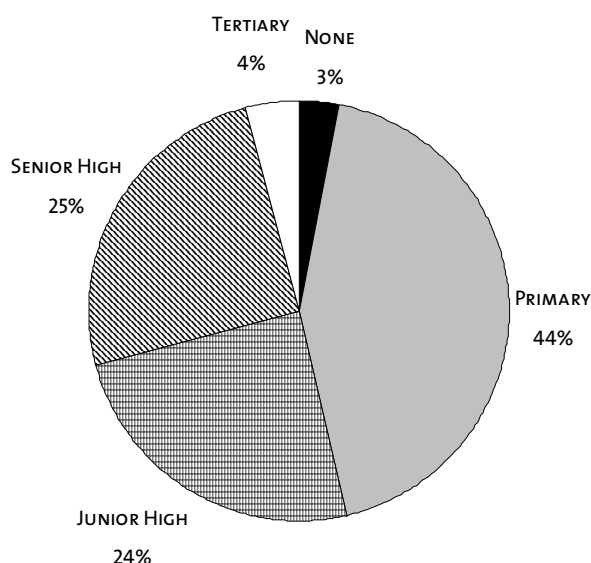
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

**What is indicated.** Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

**Data collection method.** The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

**Findings. General** – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *West Sumatra* – More than 95% of households had adequately iodized salt, which was the highest observed among all the NSS sites surveyed.

### Mothers without formal education (see Fig 2)

**What is indicated.** Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

**Data collection method.** All mothers were asked how many years of education they had completed.

**Findings. General** – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *West Sumatra* – The proportion of mothers without education was the lowest observed.

### Fathers without formal education (see Fig 3)

**What is indicated.** See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

**Data collection method.** All mothers were asked how many years of education their husbands had completed from which the proportion without formal education was calculated.

**Findings. General** – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *West Sumatra* – The proportion of fathers without education was low.

### Family planning (see Fig 4)

**What is indicated.** Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

**Data collection method.** Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. **West Sumatra** – Only 1 in 2 couples practiced family planning, which was among the second lowest observed.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). **West Sumatra** – The proportion of infants younger than 4 months that was exclusively breastfed was high compared to the other NSS sites, but the practice should be encouraged even more.

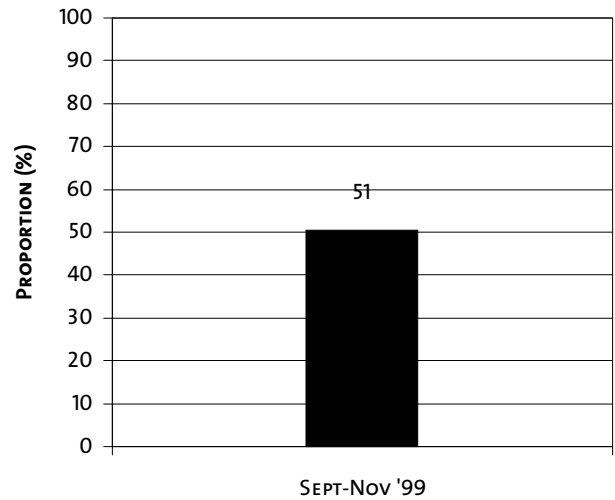
#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

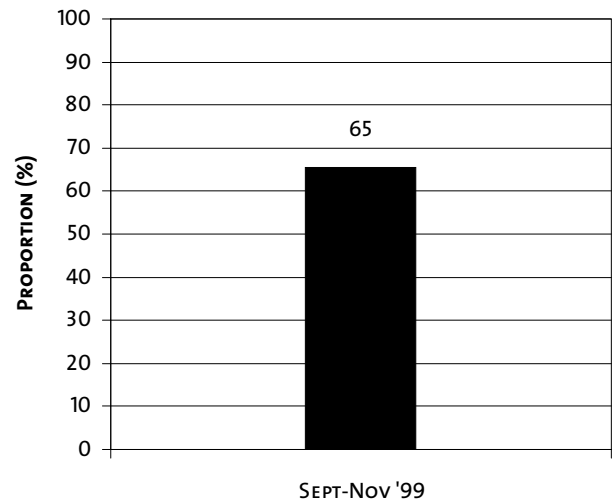
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). **West Sumatra** – Coverage was relatively high, but should be increased further.

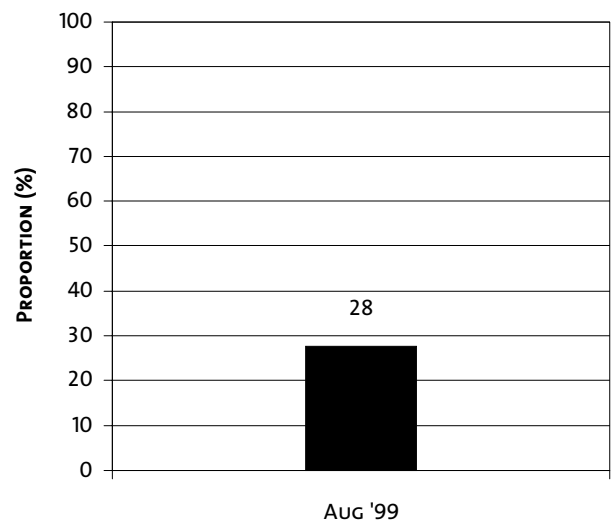
**Fig 4. Couples who practice family planning**



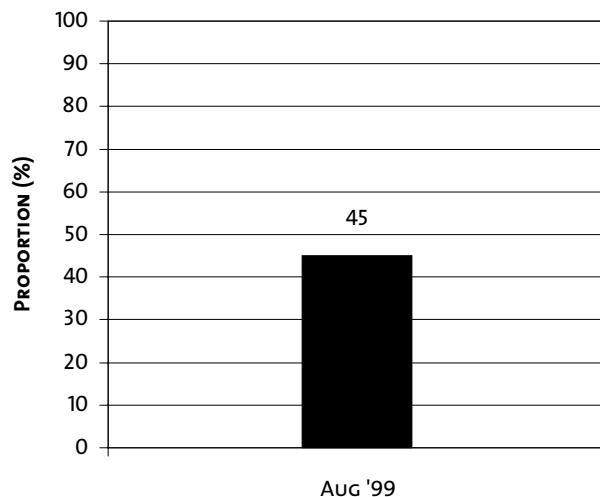
**Fig 5. Children younger than 4 months old exclusively breastfed**



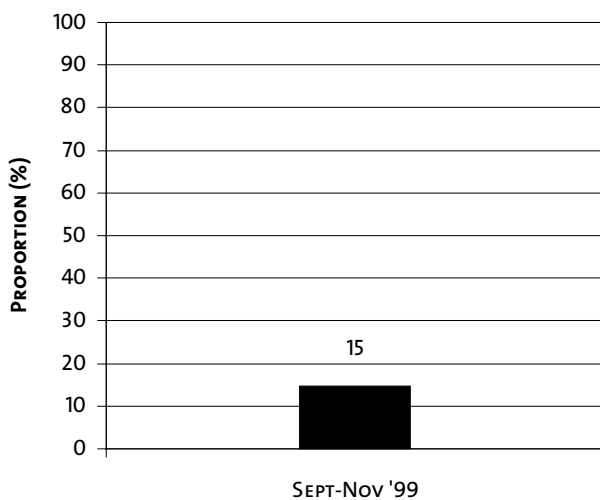
**Fig 6. VAC coverage among children aged 6-11 months, by distribution month**



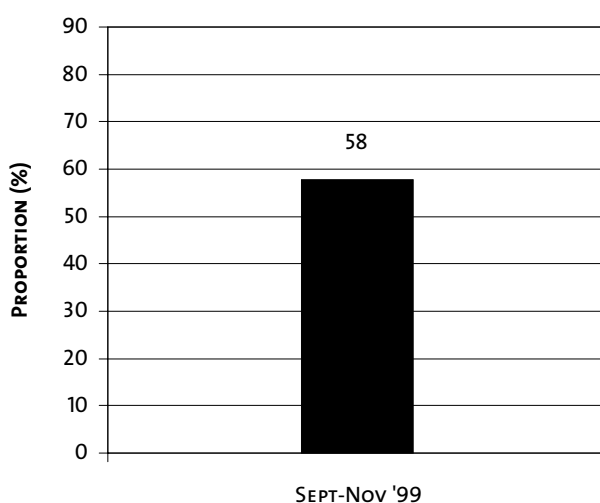
**Fig 7. VAC coverage among children aged 12-59 months, by distribution month**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *West Sumatra* – Coverage was very low, compared to other NSS sites.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *West Sumatra* – Vitamin A capsule receipt among women within one month after delivery Coverage was very low (less than 15%).

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased

in early 1999 and decreased later in the year. However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *West Sumatra* – Anemia prevalence among young children was very high.

#### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. General – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *West Sumatra* – Prevalence was slightly higher than the national pre-crisis levels.

#### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. General – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *West Sumatra* – Prevalence of maternal wasting was the lowest observed.

#### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

Fig 10. Anemia among non-pregnant women (Hb <120 g/L)

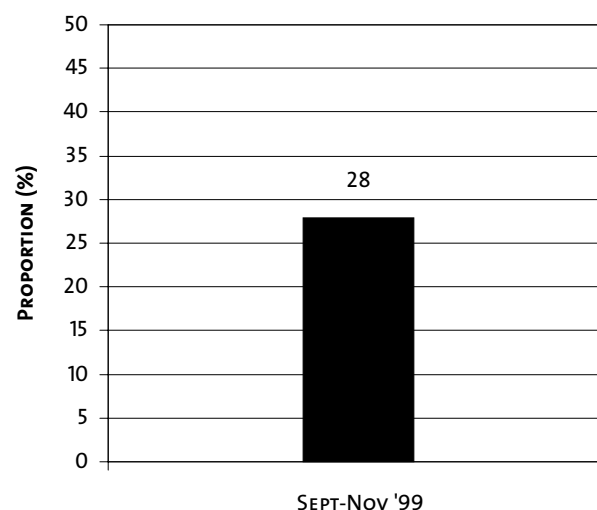


Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)

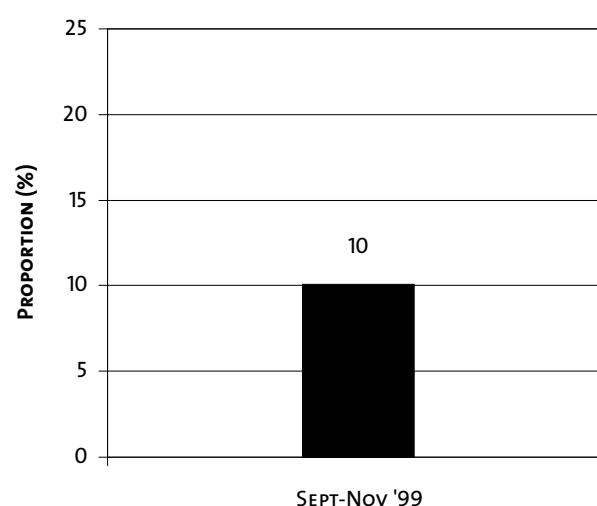
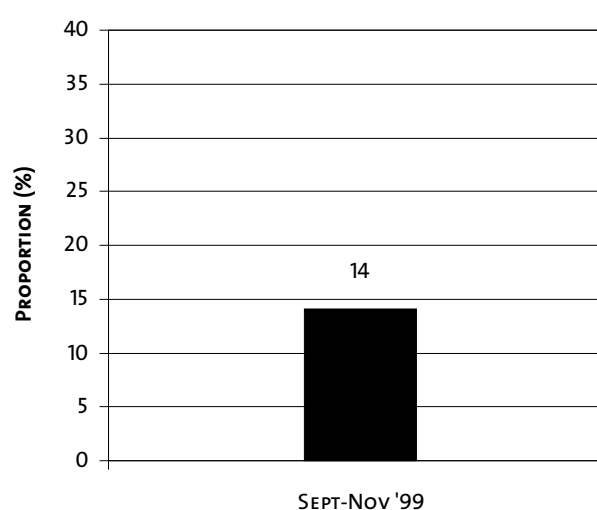
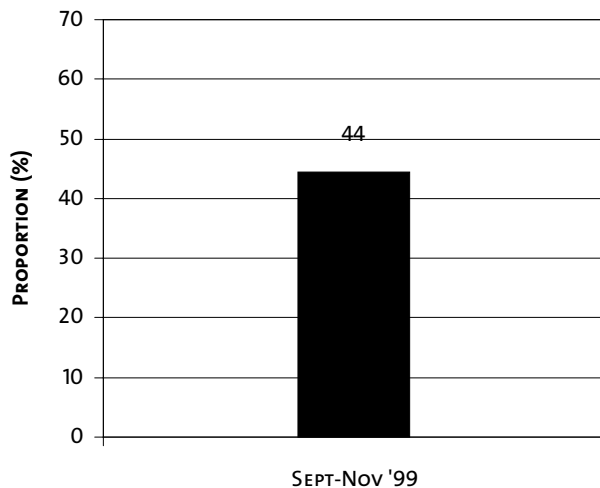


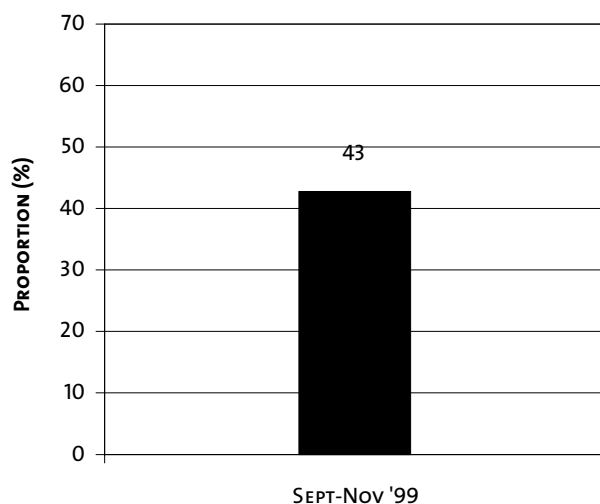
Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)



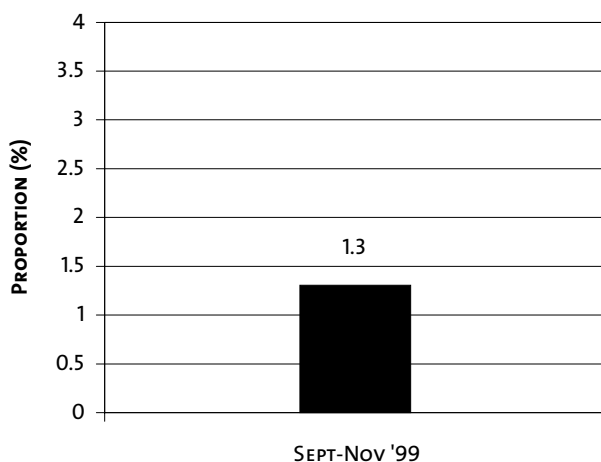
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *West Sumatra* – The prevalence of wasting was moderate compared to the other NSS sites.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *West Sumatra* – The prevalence of stunting was high.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%.

*West Sumatra* – The prevalence of underweight was moderate, due to low levels of wasting but moderate levels of stunting.



### Maternal diarrhea (see Fig 15)

**What is indicated.** Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *West Sumatra* – The prevalence of diarrhea among mothers was average.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

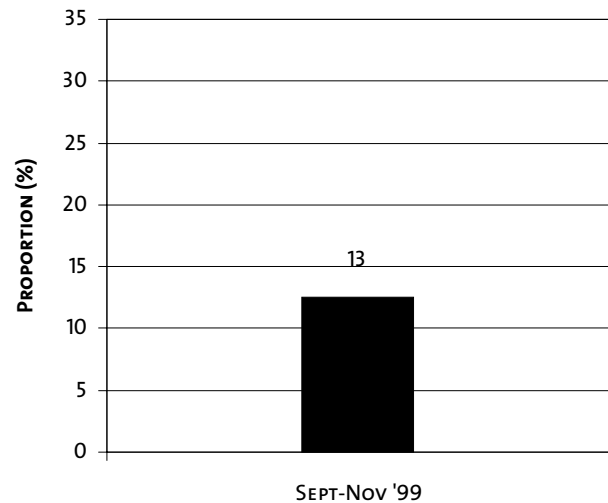
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *West Sumatra* – One in every eight children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



(aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### West Sumatra

The most evident problems in West Sumatra include the high prevalence of anemia among under-five children and mothers, and the poor coverage of vitamin A capsules among all target groups. Because the only data as yet available were from Sept-Nov '99, which was the first round of data collection, no conclusions can be drawn about changes during the last year. Data collected in the periods Apr-June and July-Sept 2000 will show whether the situation has improved during the last year.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in urban  
West Sumatra**  
**Key results for the period: Sept – Oct 1999**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for urban West Sumatra as collected during the first round of data collection, Sept – Oct 1999.**

*Selection of households*

The following steps were taken for the selection of households from slum areas of four cities in West Sumatra. First, *kelurahan* (or village-level administrative units) with slums were identified. From the total of 43 RW (or hamlet/subvillage-level administrative units) identified, 40 were then randomly selected (23 from Padang, 9 from Bukittingi, 6 from Padang Panjang and 2 from Sawah Lunto). Then, 30 households were selected from each RW by systematic sampling. For the latter, each RW was asked to prepare a list of all households with underfive children that were situated in a slum area (often, only part of the RW is a slum area), from which households were then selected based on an interval that was determined by the size of the RW. The total number of households selected was 1,200 (40 RWs x 30 households).

*Period of data collection*

Data reported here were collected in urban West Sumatra in Sept-Oct 1999.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and consumption, vitamin A capsule receipt, child

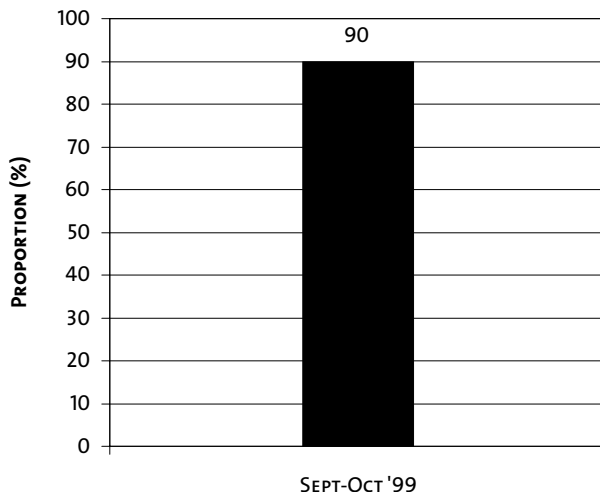
and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

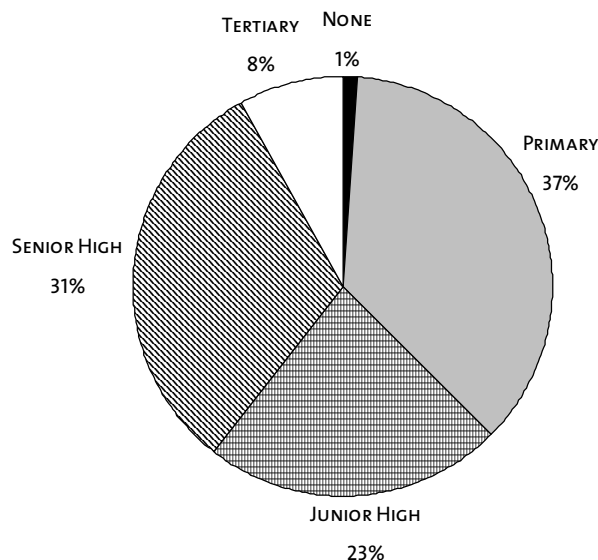
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, Lampung and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, and Makassar. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in urban West Sumatra, are described.



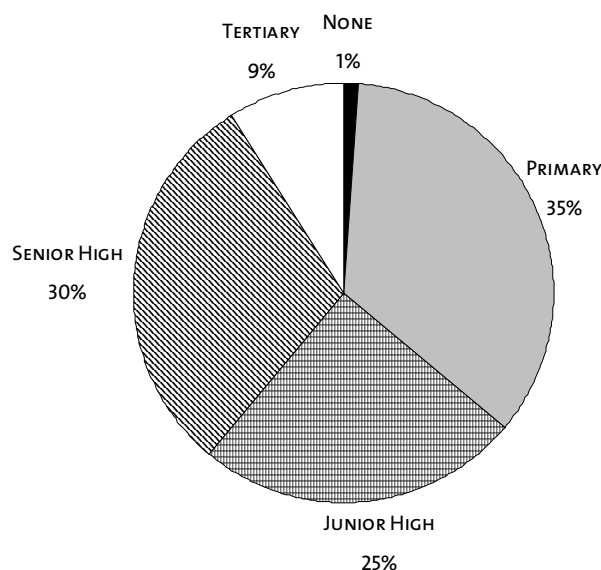
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites, the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Urban West Sumatra* – The proportion of households with adequately iodized salt was very high.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed, from which the proportion of mothers without formal education was calculated.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Urban West Sumatra* – The proportion of mothers without education was the lowest observed.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed, from which the proportion without formal education was calculated.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Urban West Sumatra* – The proportion of fathers without education was the lowest found.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

**Data collection method.** Respondents were asked whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *Urban West Sumatra* – The proportion of couples that practiced family planning was moderate.

#### Exclusive breastfeeding of infants younger than 4 mo (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *Urban West Sumatra* – Less than 1 in 2 infants younger than 4 months of age was exclusively breastfed.

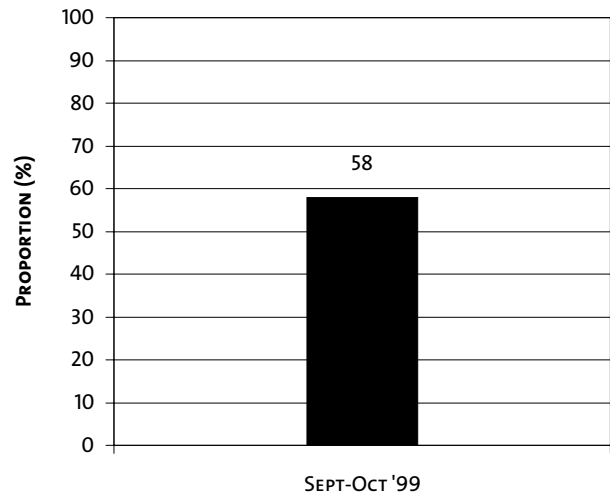
#### Vitamin A capsule receipt among children 6-11 mo old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause nightblindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 mo, who should receive 100,000 IU of vitamin A.

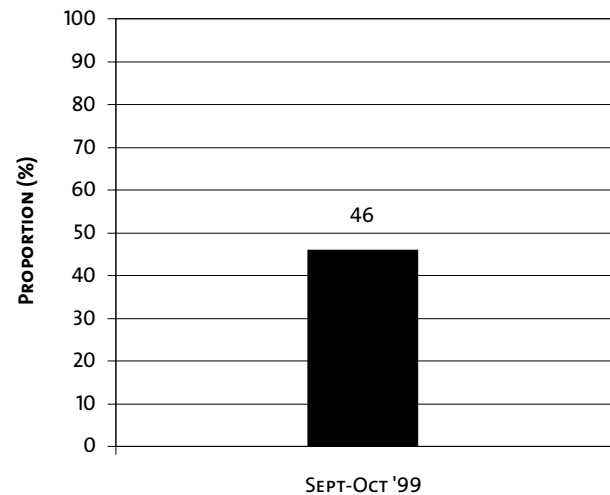
**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *Urban West Sumatra* – Coverage was relatively low.

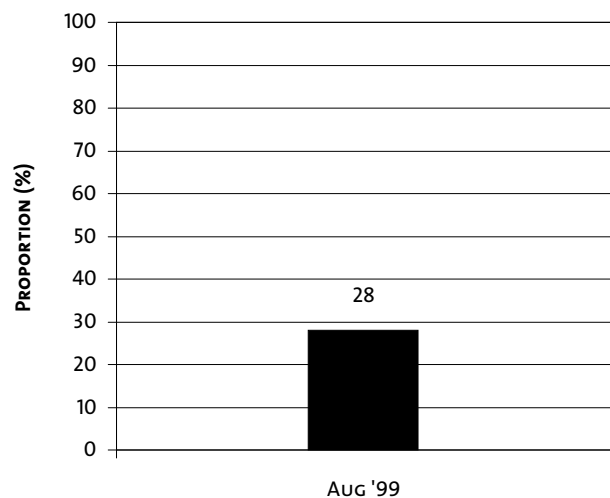
**Fig 4. Couples who practice family planning**



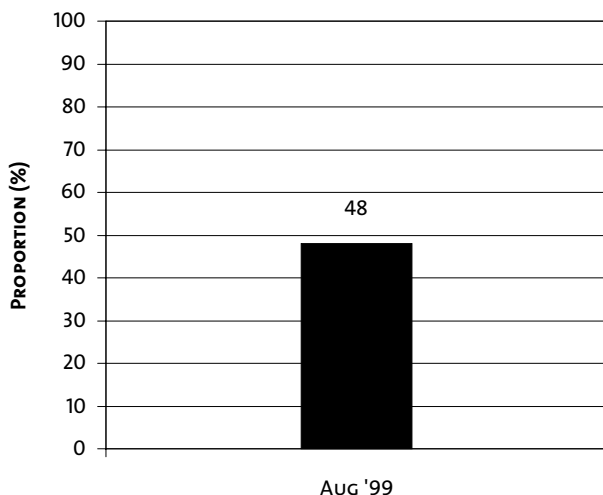
**Fig 5. Children younger than 4 mo old exclusively breastfed**



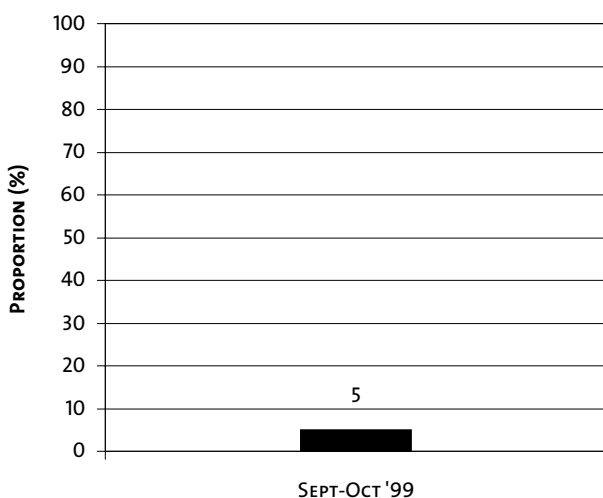
**Fig 6. VAC coverage among children aged 6-11 mo in Aug 1999**



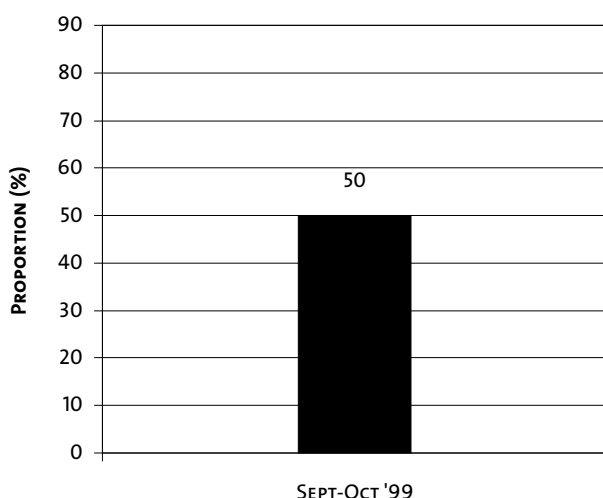
**Fig 7. VAC coverage among children aged 12-59 mo in Aug 1999**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 mo (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 mo (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 mo (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Urban West Sumatra* – Coverage was among the lowest observed.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Urban West Sumatra* – Coverage was the lowest observed.

### **Child anemia, 12-23 mo old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year.

However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Urban West Sumatra* – Anemia prevalence among young children was high.

### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Urban West Sumatra* – Prevalence was slightly higher than the national pre-crisis levels.

### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

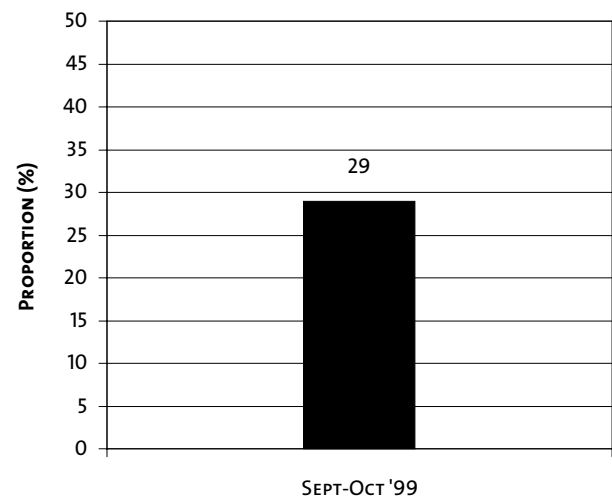
Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Urban West Sumatra* – Prevalence of maternal wasting was the lowest observed.

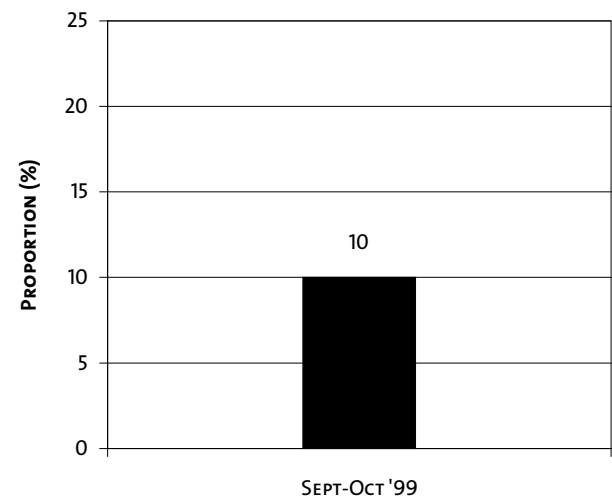
### Child wasting, 12-23 mo old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

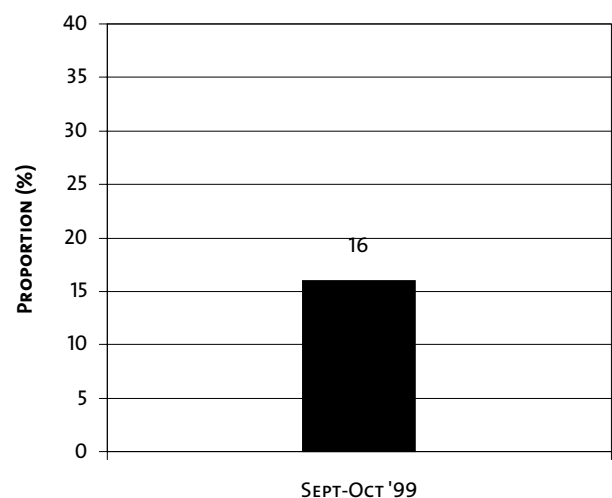
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



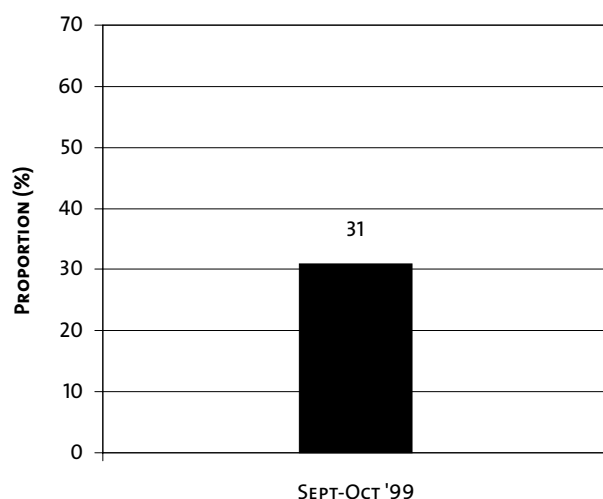
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



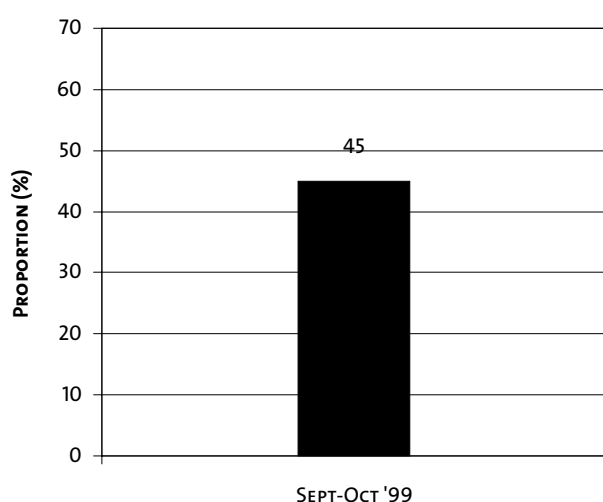
**Fig 12. Wasting among children aged 12-23 mo (WHZ <-2 SD)**



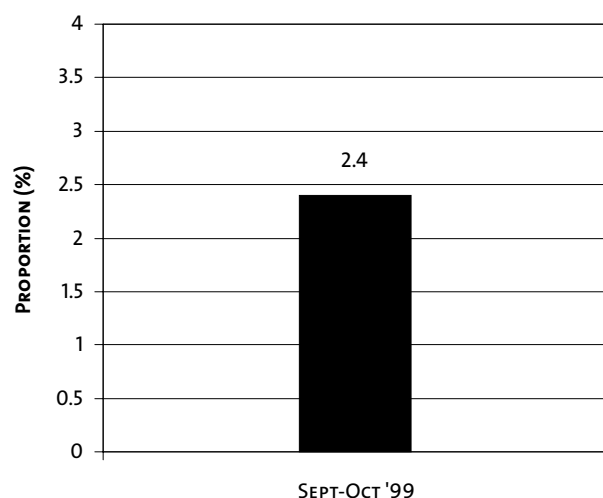
**Fig 13. Stunting among children aged 12-23 mo (HAZ < -2 SD)**



**Fig 14. Underweight children aged 12-23 mo (WAZ < -2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *Urban West Sumatra* – The prevalence of wasting was moderate.

#### **Child stunting, 12-23 mo old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *Urban West Sumatra* – The prevalence of stunting was relatively low.

#### **Child underweight, 12-23 mo old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *Urban West Sumatra* – The prevalence of underweight was moderate.

#### **Maternal diarrhea (see Fig 15)**

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and



easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions. Data collection method. Respondents were asked whether they suffered from diarrhea during the previous 7 days.

Findings. General – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. *Urban West Sumatra* – The prevalence of diarrhea among mothers was relatively high.

### Child diarrhea, 12-23 mo old (see Fig 16)

What is indicated. See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

Data collection method. Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

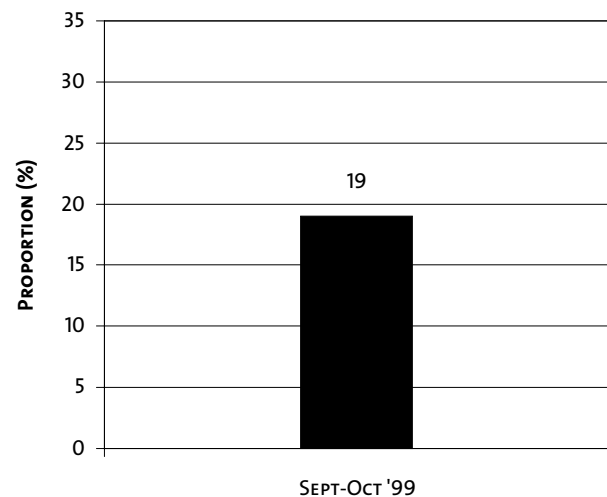
Findings. General – The prevalence of diarrhea among children aged 12-23 mo was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. *Urban West Sumatra* – One in five children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The

**Fig 16. Diarrhea among children aged 12-23 mo in week prior to interview**



prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Urban West Sumatra

The most evident problems in urban West Sumatra include the high prevalence of anemia among underfive children and mothers, the very small proportion of infants younger than 4 months old that is exclusively breastfed, and the very low coverage of vitamin A capsule distribution among all target groups. Because the only data available were from Sept-Oct 1999, no conclusions can be drawn about recent changes.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgement is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in rural Lampung**  
**Key results for the period: Apr – Jun 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for rural Lampung as collected during the first round of data collection, April – June 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of Lampung was divided into three ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from Lampung per round of data collection was 3,600 (3 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in Lampung in Apr-Jun 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and

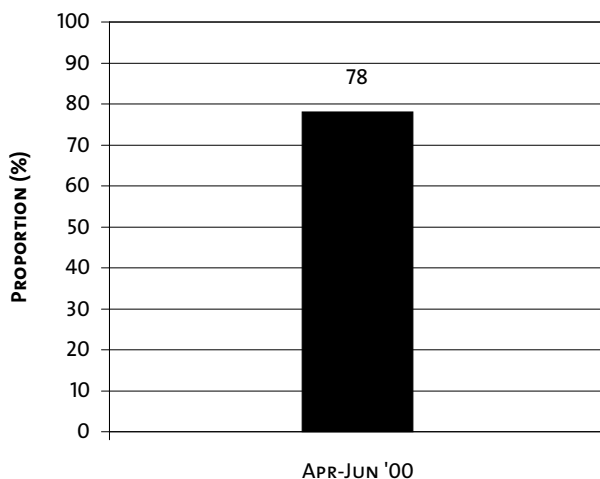
consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

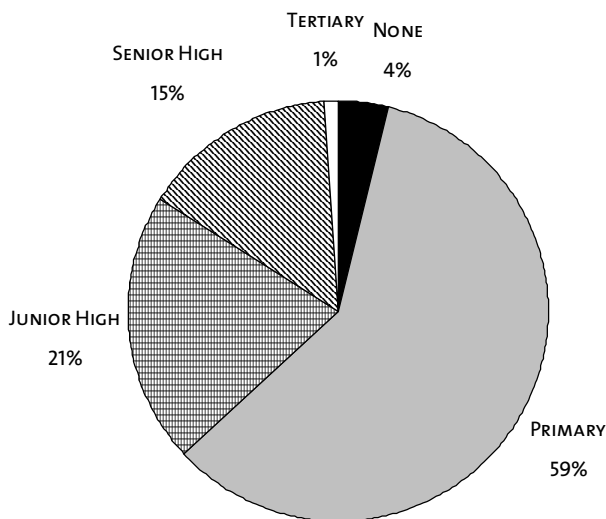
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. Data are given per period of data collection. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, South Sulawesi, and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in Lampung, are described.



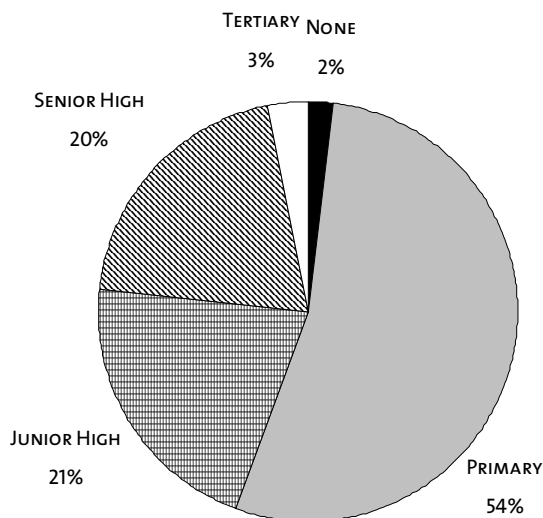
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. *General* – In most NSS sites the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *Lampung* – The proportion of households with adequately iodized salt was relatively high.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed, from which the proportion of mothers without formal education was calculated.

Findings. *General* – In all NSS sites, except Lombok, the proportion of mothers without formal education was below 10%. *Lampung* – The proportion of mothers without education was average.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed, from which the proportion without formal education was calculated.

Findings. *General* – In all NSS sites, except Lombok, the proportion of fathers without formal education was below 8%. *Lampung* – The proportion of fathers without education was among the lowest found.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS sites, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *Lampung* – A relatively large proportion of couples practiced family planning.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *Lampung* – Less than 1 in 2 infants younger than 4 months of age was exclusively breastfed.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS sites. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *Lampung* – Coverage was relatively high, but should be increased further.

Fig 4. Couples who practice family planning

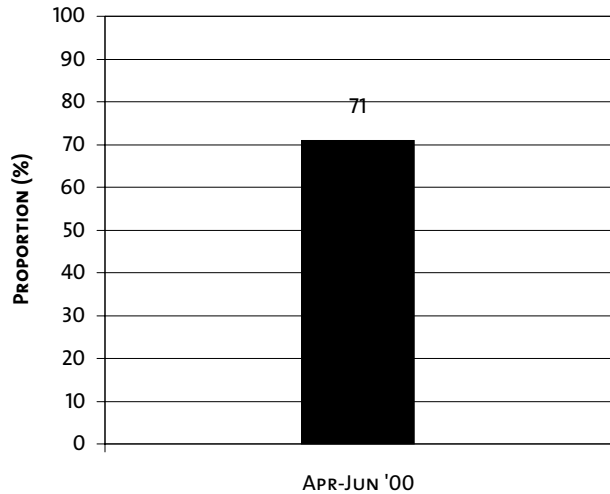


Fig 5. Children younger than 4 months old exclusively breastfed

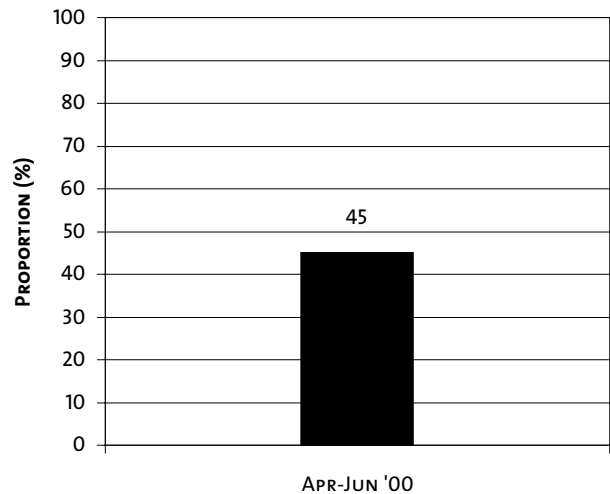
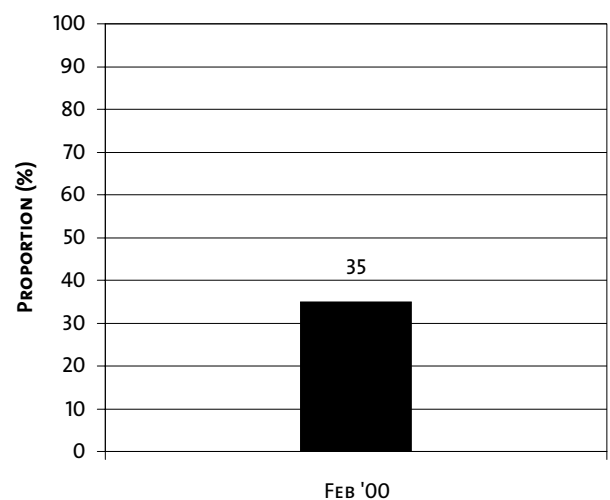
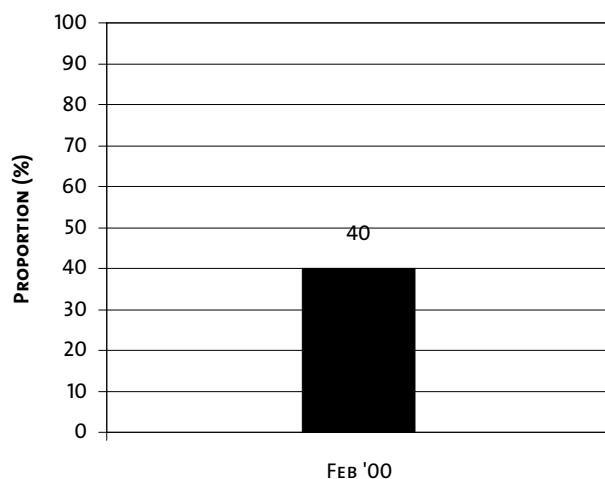
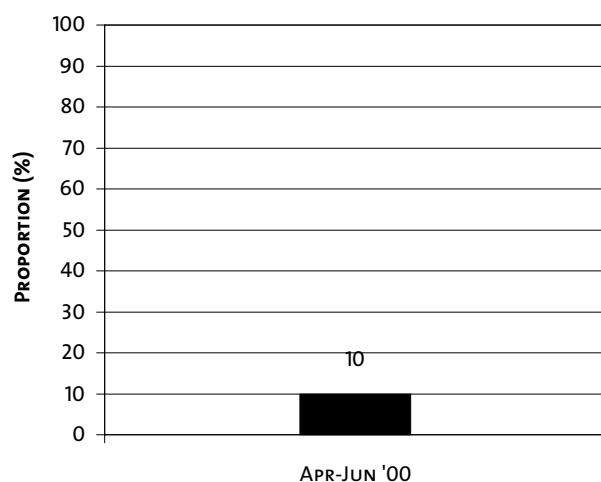
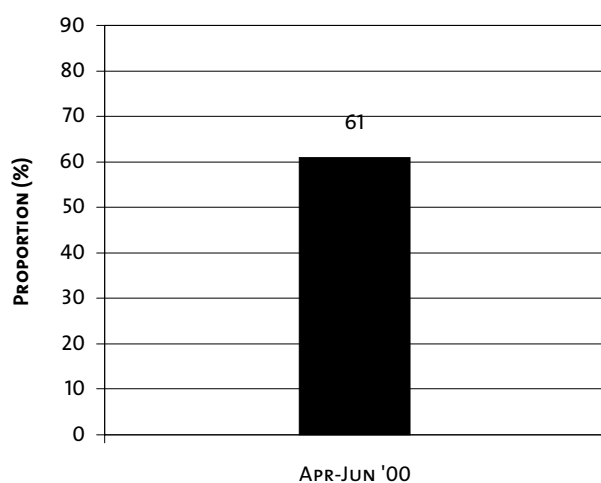


Fig 6. VAC coverage among children aged 6-11 months in Feb 2000



**Fig 7. VAC coverage among children aged 12-59 months in Feb 2000****Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)****Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)****Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS sites, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *Lampung* – Coverage was very low, compared to other NSS sites.

**Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *Lampung* – Coverage was among the lowest observed.

**Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS sites. In most NSS sites, it increased in early 1999 and decreased later in the year.

However, the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *Lampung* – Anemia prevalence among young children was very high.

### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *Lampung* – Prevalence was slightly higher than the national pre-crisis levels.

### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

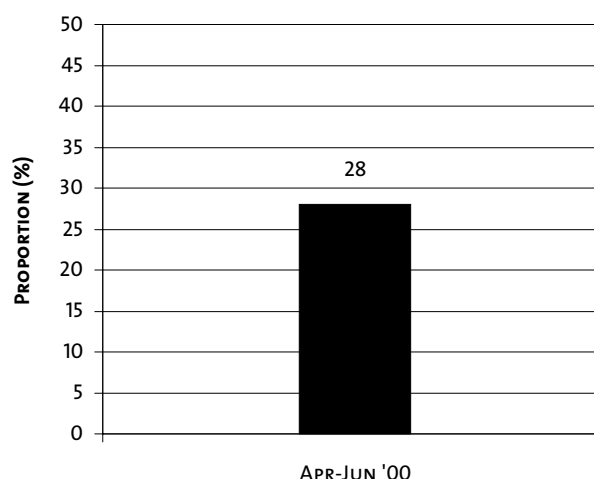
Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS sites in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS sites, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *Lampung* – Prevalence of maternal wasting was relatively low.

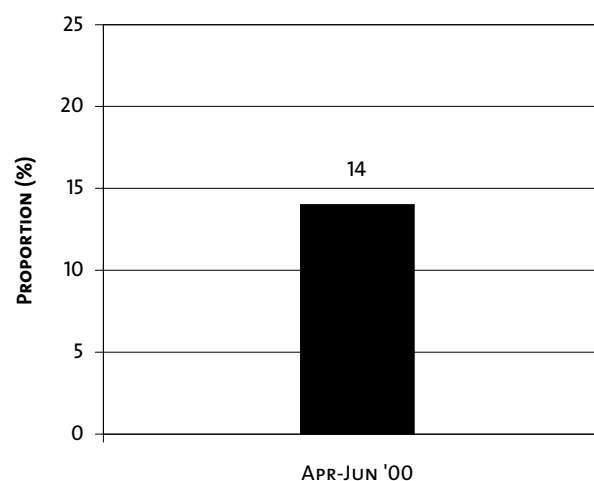
### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

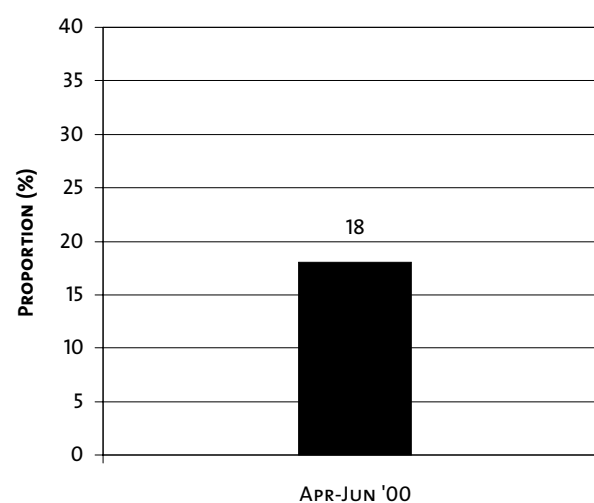
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



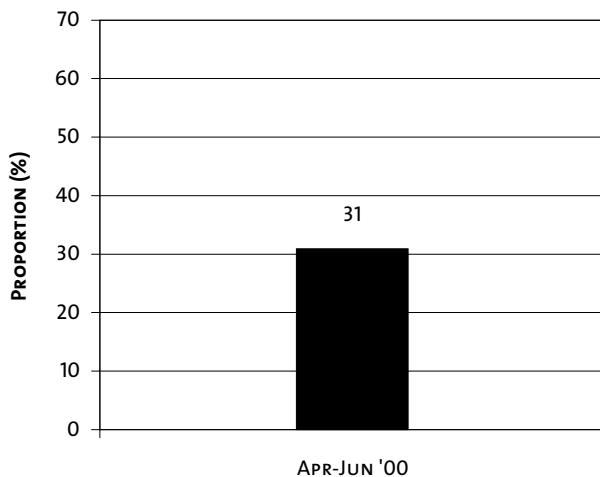
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



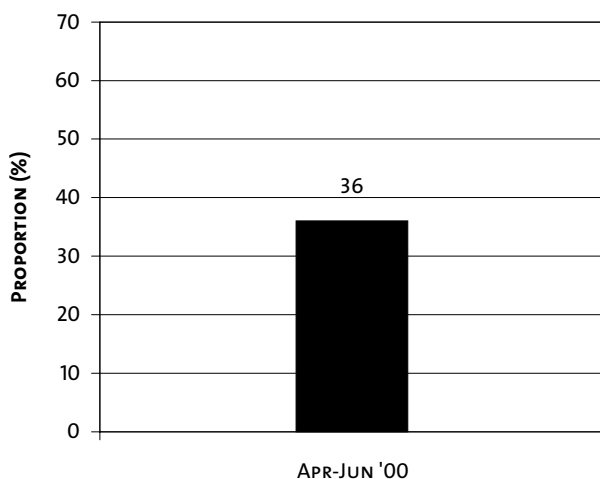
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



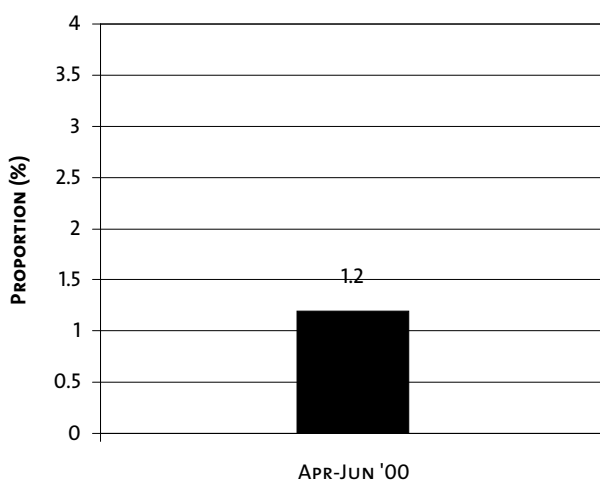
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS sites, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *Lampung* – The prevalence of wasting was relatively high in mid-2000.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *Lampung* – The prevalence of stunting was relatively low, especially when compared to other rural NSS sites.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS sites, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *Lampung* – The prevalence of underweight was relatively low.

#### **Maternal diarrhea (see Fig 15)**

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs



relatively frequently and its definition (3 or more loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions. **Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **Lampung** – The prevalence of diarrhea among mothers was average.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

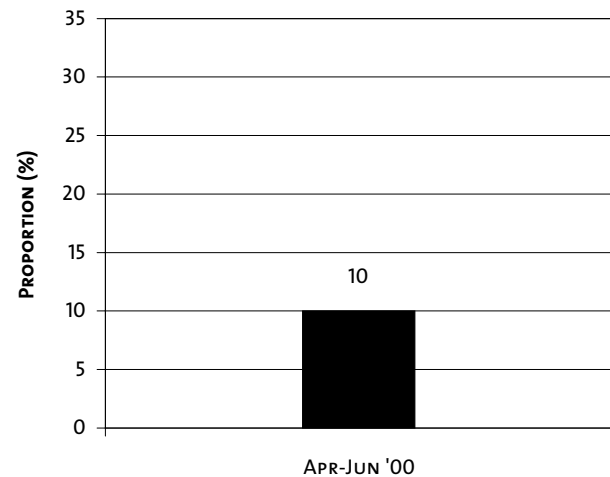
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS sites and remained the same or increased in rural NSS sites. **Lampung** – One in 10 children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



month after delivery needs to be increased in all areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### Lampung

The most evident problems in rural Lampung include the high prevalence of anemia among under-five children and mothers, the very small proportion of infants younger than 4 months old that is exclusively breastfed, and the poor coverage of vitamin A capsule distribution among all target groups. Because the only data as yet available were from April – June 2000, which was the first round of data collection, no conclusions can be drawn about recent changes. Data collected later in 2000 will show whether the situation is improving.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjong  
Deputy Director  
E-mail: rtjong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in South Sulawesi**  
**Key results for the period: Apr – Jun 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for South Sulawesi as collected during the first round of data collection, Apr – Jun 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of South Sulawesi was divided into three ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from South Sulawesi per round of data collection was 3,600 (5 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in South Sulawesi in Apr-Jun 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and

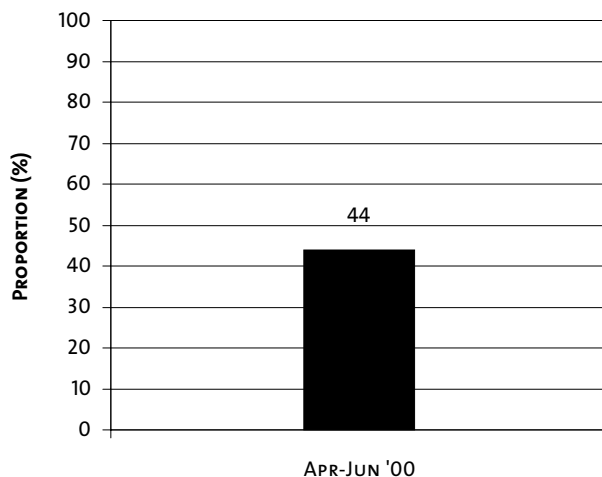
consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

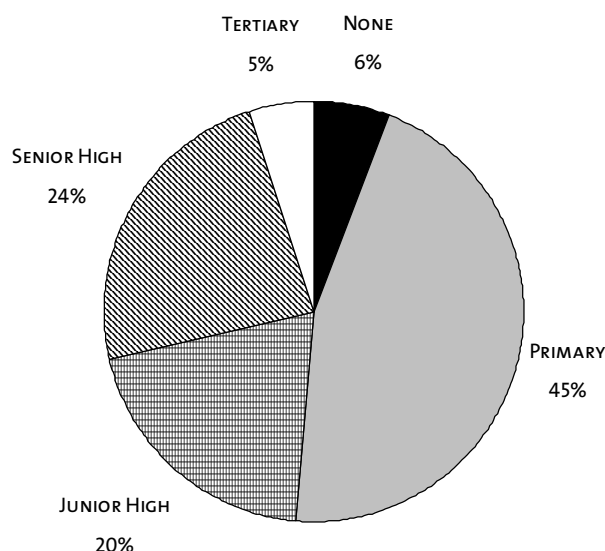
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. For West Sumatra, data are given per period of data collection, while data of the best and worst area in 1999-early 2000 for the respective indicator are also shown. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, Lampung and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in South Sulawesi, are described.



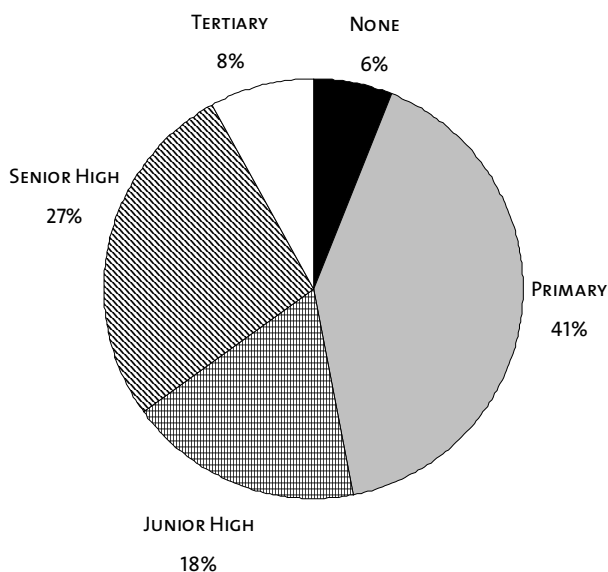
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

**What is indicated.** Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

**Data collection method.** The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

**Findings. General** – In most NSS site the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *South Sulawesi* – Less than 45% of households had adequately iodized salt, which was relatively low.

### Mothers without formal education (see Fig 2)

**What is indicated.** Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

**Data collection method.** All mothers were asked how many years of education they had completed, from which the proportion of mothers without formal education was calculated.

**Findings. General** – In all NSS site, except Lombok, the proportion of mothers without formal education was below 10%. *South Sulawesi* – The proportion of mothers without education was slightly higher than observed elsewhere.

### Fathers without formal education (see Fig 3)

**What is indicated.** See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

**Data collection method.** All mothers were asked how many years of education their husbands had completed, from which the proportion without formal education was calculated.

**Findings. General** – In all NSS site, except Lombok, the proportion of fathers without formal education was below 8%. *South Sulawesi* – The proportion of fathers without education was relatively high.

### Family planning (see Fig 4)

**What is indicated.** Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

**Data collection method.** Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS site, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *South Sulawesi* – Only 1 in 2 couples practiced family planning, which was among the second lowest observed.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *South Sulawesi* – The proportion of infants younger than 4 months that was exclusively breastfed was the highest observed and needs continued support.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS site. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *South Sulawesi* – Coverage was relatively high, but should be increased further.

Fig 4. Couples who practice family planning

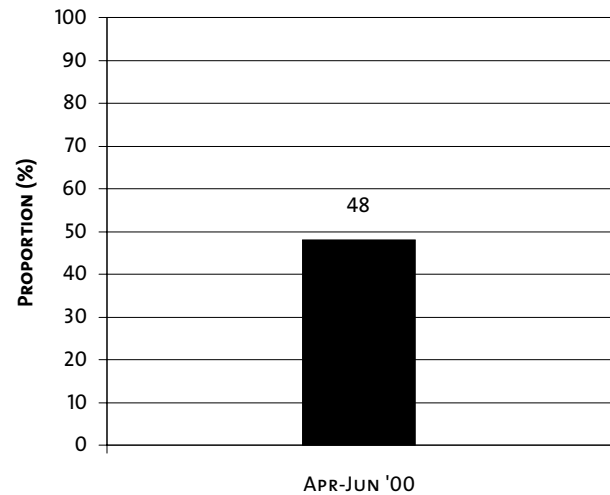


Fig 5. Children younger than 4 months old exclusively breastfed

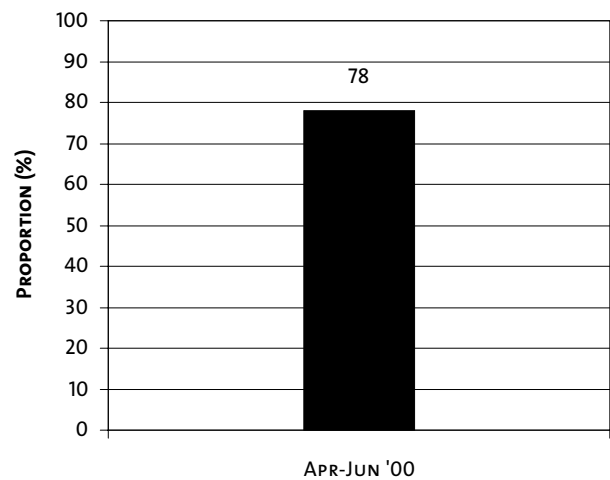
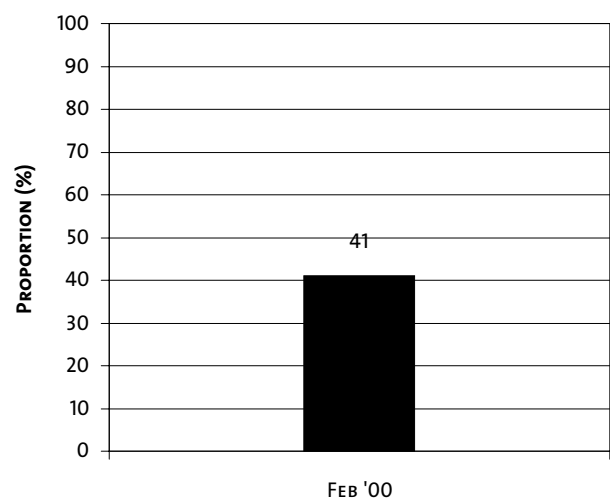
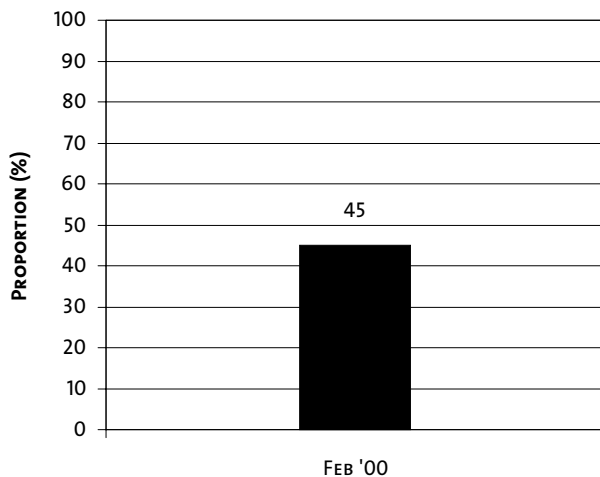


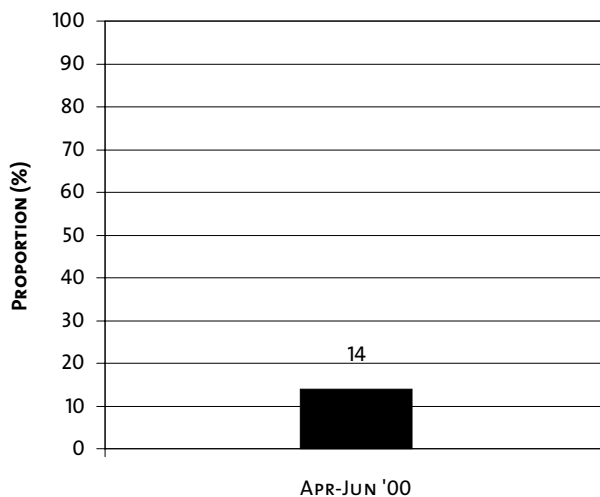
Fig 6. VAC coverage among children aged 6-11 months in Feb 2000



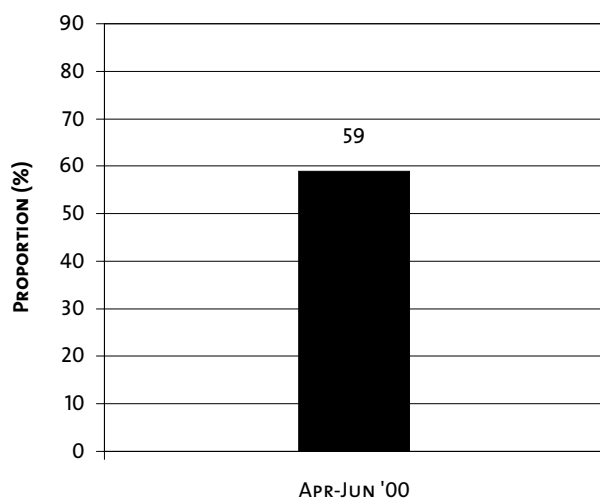
**Fig 7. VAC coverage among children aged 12-59 months in Feb 2000**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS site, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *South Sulawesi* – Coverage was very low, compared to other NSS site.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery. Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *South Sulawesi* – Coverage was very low.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS site. In most NSS site, it increased in early 1999 and decreased later in the year. However,

the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *South Sulawesi* – Anemia prevalence among young children was very high.

### Maternal anemia (see Fig 10)

**What is indicated.** Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

**Data collection method.** Same as for children.

**Findings. General** – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *South Sulawesi* – Prevalence was slightly higher than the national pre-crisis levels.

### Maternal wasting (see Fig 11)

**What is indicated.** Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

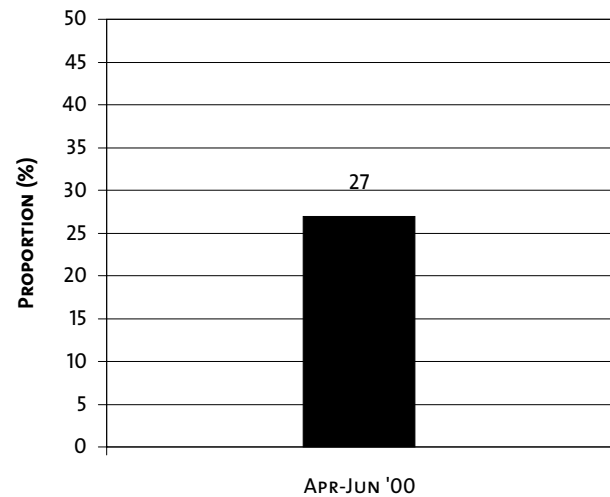
**Data collection method.** Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

**Findings. General** – Prevalence of maternal wasting was highest in urban slum NSS site in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS site, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *South Sulawesi* – Prevalence of maternal wasting was among the lowest observed.

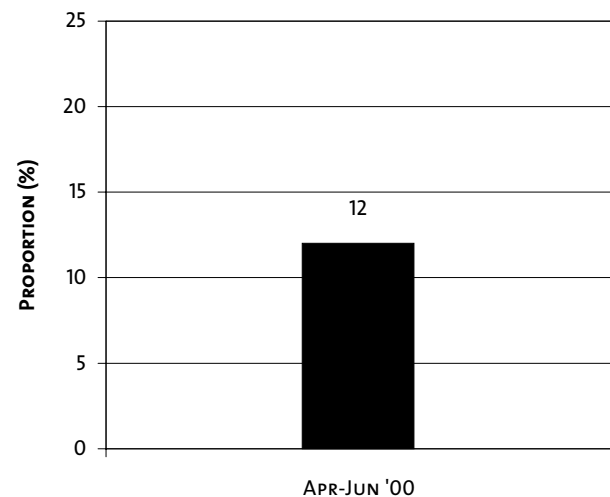
### Child wasting, 12-23 months old (see Fig 12)

**What is indicated.** Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

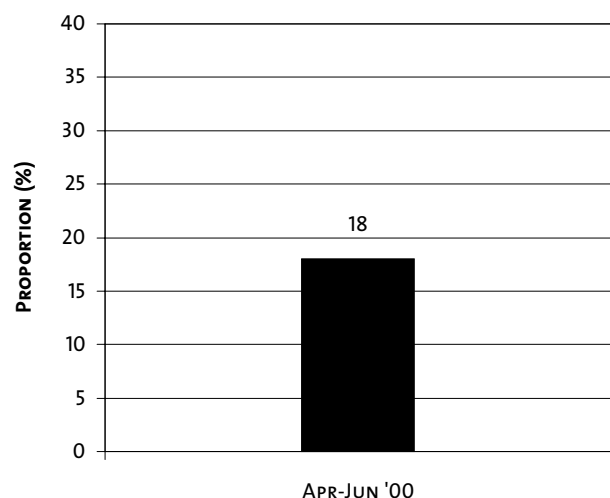
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



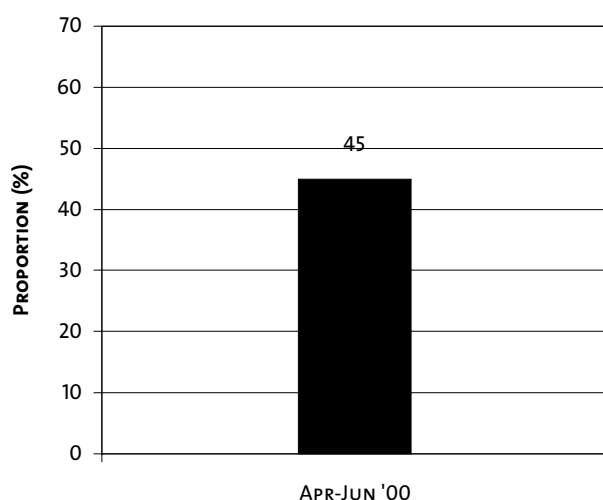
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



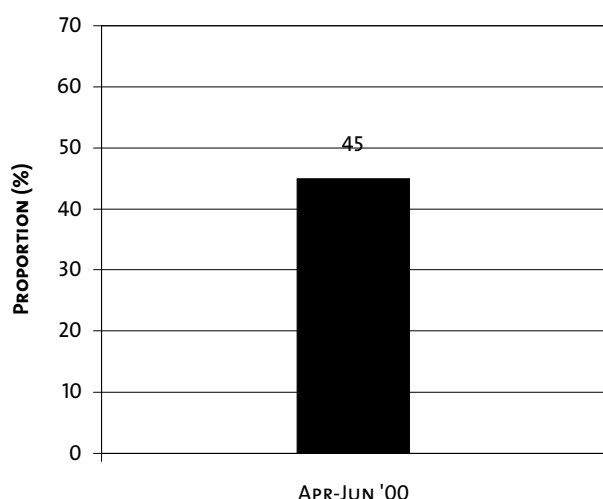
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



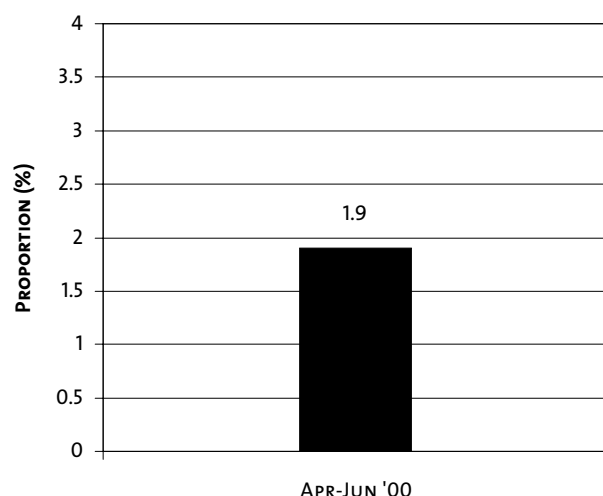
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS site, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *South Sulawesi* – The prevalence of wasting was relatively high in mid-2000.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *South Sulawesi* – The prevalence of stunting was high.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS site, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *South Sulawesi* – The prevalence of underweight was moderate.

#### **Maternal diarrhea (see Fig 15)**

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more



loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **South Sulawesi** – The prevalence of diarrhea among mothers was average.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

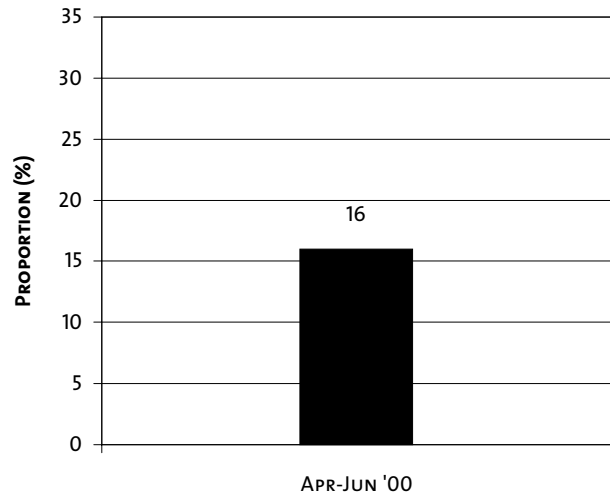
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS site and remained the same or increased in rural NSS site. **South Sulawesi** – One in every seven children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### South Sulawesi

The most evident problems in rural South Sulawesi include the high prevalence of anemia among underfive children and mothers, the poor coverage of vitamin A capsule distribution among all target groups, and the relatively low availability of iodized salt. Because the only data as yet available were from April-June 2000, which was the first round of data collection, no conclusions can be drawn about recent changes. Data collected later in 2000 will show whether the situation is improving.



**Helen Keller**  
WORLDWIDE  
**Helen Keller International**  
a division of  
Helen Keller Worldwide

FOR INFORMATION AND CORRESPONDENCE, CONTACT:

Dr. Dini Latief  
Directorate of Community Nutrition  
Ministry of Health  
Jl. H.R. Rasuna Said  
Blok X 5 Kav. 4-9  
Jakarta 12950  
Indonesia  
Tel (62-21) 520-3883  
Fax (62-21) 521-0176  
E-mail: latieffs@centrin.net.id

Dr. Soewarta Kosen  
National Institute for Health  
Research & Development  
Jl Percetakan Negara No. 23A  
Jakarta 10560  
Indonesia  
Tel (62-21) 424-3314 / 426-1088 ext. 192  
Fax (62-21) 421-1845  
E-mail: kosen@centrin.net.id

- Dr. Martin W. Bloem  
Regional Director/Country Director  
E-mail: mwbloem@compuserve.com
- Dr. Regina Moench-Pfanner  
Regional Coordinator  
E-mail: remoench@cbn.net.id
- Dr. Saskia de Pee  
Regional Nutrition Research Advisor  
E-mail: sdepee@compuserve.com

Helen Keller International  
Asia-Pacific Regional Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

*For general enquiries:*  
Federico Graciano  
E-mail: fgraciano@hki-indonesia.org

- Lynnda Kiess  
Nutrition Surveillance System  
Program Director  
E-mail: lkiess@hki-indonesia.org
- Mayang Sari  
Head of Nutrition  
E-mail: msari@hki-indonesia.org
- Dr. Roy Tjiong  
Deputy Director  
E-mail: rtjiong@hki-indonesia.org

Helen Keller International  
Indonesia Country Office  
P.O. Box 4338  
Jakarta Pusat  
Indonesia  
Tel (62-21) 719-9163 / 719-8147  
Fax (62-21) 719-8148

© 2000 Helen Keller Worldwide

Reprints or reproductions of portions or all of this document are encouraged provided due acknowledgment is given to the publication and publisher

Projects carried out by HKI-Indonesia in collaboration with the above organizations are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

## Acknowledgements

*The NSS is a collaborative effort between the Government of Indonesia, local research institutions and Helen Keller International. Below is a list of key persons involved in the implementation of the NSS at the central and provincial levels.*

### GOVERNMENT OF INDONESIA – CENTRAL LEVEL

- Dr. Sri Astuti S. Soeparmanto, M.Sc.P.H. (Director of the National Institute for Health Research and Development, MOH)
- Prof. Dr. Umar Fahmy, M.P.H., Ph.D. (Director of the Directorate-General for Communicable Disease Control and Environmental Health, MOH)
- Drs. Arum Atmawikarta, M.P.H. (Director of the Nutrition Research and Development Center, MOH)
- Prof. DR. Muhilal (Senior Staffer at the Nutrition Research and Development Center, MOH)
- Dr. Fasli Jalal (Expert staffer at the Ministry of Education and Cultural Resources)
- Dr. Dini Latief, M.Sc. (Head of the Directorate of Community Nutrition, MOH)
- Dr. Soewarta Kosen, M.P.H., Ph.D. (Senior Staffer at the Research Program for Health Policy and Economic Development, MOH)
- Dr. Ani Kurniawan, M.Sc. (Head of the Sub-Directorate for Malnutrition Prevention, Directorate of Community Nutrition, MOH)
- Atmarita, MPH, Ph.D. (Staffer at the Directorate of Community Nutrition, MOH)
- Minarto, M.P.S. (Head of the Sub-Directorate of Nutrition Surveillance, Directorate of Community Nutrition, MOH)
- Cornelia, S.K.M., M.Sc. (Staffer at the Directorate of Community Nutrition, MOH)
- Ni Ketut Aryastami, M.C.N. (Researcher at the National Institute for Health Research and Development, MOH)
- Dr. Roy G.A. Massie, M.P.H. (Researcher at the National Institute for Health Research and Development, MOH)

### PROVINCIAL LEVEL (LISTED BY PROVINCE)

#### Jakarta

##### GOI

- Dr. Deddy Ruswendi, M.P.H. (Head of the Provincial Office of the MOH, DKI Jakarta)
- Dr. H Achmad Haryadi (Head of the Local Health Office of the MOH, DKI Jakarta)
- Etty Agustiani, S.K.M. (Provincial Coordinator)

##### HKI

- Field Supervisors (3)
- Quality Controllers (2)
- Enumerators (18)

#### West Java

##### GOI

- Dr. Adnan Machmud (Head of the Provincial Office of the MOH, West Java)
- Dr. H Nono Tjahjono (Head of the Local Health Office of the MOH, West Java)
- Dr. Hedy B. Sampurno (Provincial Coordinator)

##### HKI

- Dewi Widiastuti, SP (Field Coordinator)
- Field Supervisors (4)
- Quality Controllers (4)
- Enumerators (32)

## Central Java

### GOI

- Dr. H Soejono Hardjo Soedarmo, S.K.M. (Head of the Provincial Office of the MOH, Central Java)
- DR. Dr. H Sudibjo Juwono, M.P.H. (Head of the Local Health Office of the MOH, Central Java)

### University/Institution

- Prof. DR. Dr. Satoto (Co-PI of the NSS, Head of Central Java Provincial Research Council)

### HKI

- Agus Suyanto, S.T.P. (Field Coordinator)
- Sri Sukarni, S.E. (Treasurer)
- Rochmat Pujiasatanto (Administrator)
- Field Supervisors (5)
- Quality Controllers (6)
- Enumerators (53)

## East Java

### GOI

- Dr. Udin Muhammad Muslaini (Head of the Provincial Office of the MOH, East Java)
- Dr. Tarbinu Kasmono, M.P.H. (Head of the Local Health Office of the MOH, East Java)
- Sugeng Eko Irianto, M.P.S. (Provincial Coordinator)

### University/Institution

- Dr. Benny Soegianto, M.P.H. (Co-PI of the NSS, School of Nutrition, Surabaya, East Java)

### HKI

- Mas Ummu Saadah (Administrator)
- Soegeng Afriyanto (Programmer)
- Field Supervisors (4)
- Quality Controllers (5)
- Enumerators (6)
- Data Entry Operators (6)

## West Sumatra

### GOI

- Dr. Rasyidah Rasyid, M.P.H. (Head of the Provincial Office of the MOH, West Sumatra)
- Dr. H Firdaus Bahaudin (Head of the Local Health Office of the MOH, West Sumatra)

### University/Institution

- Dr. Zulkarnain Agus, M.P.H., M.Sc. (Co-PI of the NSS, Faculty of Medicine, Andalas University, Padang, West Sumatra)
- Dr. Hafni Bachtiar, M.P.H. (Co-PI of the NSS, Faculty of Medicine, Andalas University, Padang, West Sumatra)
- Dr. Masrul, M.Sc. (Co-PI of the NSS, Faculty of Medicine, Andalas University, Padang, West Sumatra)

### HKI

- Nurjannah, S.T.P. (Field Coordinator)
- Field Supervisors (4)
- Quality Controllers (4)
- Enumerators (45)

## South Sulawesi

### GOI

- Dr. H.M. Akib Kamaluddin (Head of the Provincial Office of the MOH, South Sulawesi)
- Dr. M Mustafa Djide, S.K.M. (Head of the Local Health Office of the MOH, South Sulawesi)

### University/Institution

- DR. Dr. Razak Thaha, M.Sc. (Co-PI of the NSS, Center for Food and Nutrition Study, Hasanuddin University, Makassar, South Sulawesi)
- Dra. Hj. Nurhaedar Jafar, Apt., M.Kes. (Administrator)

### HKI

- Badwi S. Amin, S.K.M. (Field Coordinator)
- Field Supervisors (4)
- Quality Controllers (4)
- Enumerators (36)

## Acknowledgements

### Lampung

#### GOI

- Dr. Wahyu Purwaganda (Head of the Provincial Office of the MOH, Lampung)
- Dr. Achmad Sofyan, A.T. (Head of the Local Health Office of the MOH, Lampung)
- Bertalina, S.K.M. (Provincial Coordinator)

#### HKI

- Slamet Widodo, S.T. (Field Coordinator)
- Gayuh Tri Upayani, S.P. (Administrator)
- Field Supervisors (3)
- Quality Controller (3)
- Enumerators (24)

### West Nusa Tenggara (Lombok)

#### GOI

- Dr. Mas Irwan Singagerda (Head of the Provincial Office of the MOH, West Nusa Tenggara)
- Dr. Aswandono (Head of the Local Health Office of the MOH, West Nusa Tenggara)
- Dr. Agus Sutanto (Provincial Coordinator)
- Erlan Tarlan (Provincial Field Coordinator)

#### HKI

- Sanadi, A.Md. (Field Coordinator)
- Field Supervisors (3)
- Quality Controllers (2)
- Enumerators (18)

*The following list reflects the contributions of key HKI staff to the NSS.*

### KEY STAFF

- Martin W Bloem, M.D., Ph.D. (Regional Director, Asia-Pacific; Country Director, Indonesia)
- Saskia de Pee, Ph.D. (Regional Nutrition Research Advisor, Asia-Pacific)
- Roy Tjiong, M.D. (Deputy Country Director, Indonesia)
- Lynnnda Kiess, M.P.H. (Program Director)
- Mayang Sari, M.Sc. (Program Manager)
- Elviyanti Martini, M.Sc. (Senior Program Officer)
- Ir. Siti Halati (Senior Program Officer)
- Rika Juliarni, M.Sc. (Program Officer)
- Endang Dewayanti, M.Sc. (Program Officer)
- Ir. Sugiatmi (Program Officer)
- Regina Moench Pfanner, M.Sc., Ph.D. (Regional Coordinator, Asia-Pacific)
- Pim van Heijst, M.Sc. (Vitamin A Program Coordinator)
- Federico Graciano (Publications Consultant)
- Azrul I. Nasution (Finance Manager)
- Melati Puspitasari (Secretary to Nutrition Division)

### DATA MANAGEMENT AND TRAINING TEAMS

#### Data Management

- Mayang Sari, M.Sc. (Program Manager)
- Ir. Eha Juliaha (Data Entry Manager)
- Azhar Nasution, S.S. (Assistant Data Entry Manager)
- Nenny Lindiya Puspaningsari, S.P. (Assistant Data Entry Manager)
- Tuti Rahmawati, S.P. (Assistant to NSS)
- Soegeng Afriyanto (Programmer)
- Nurcahya Panca Aria (Assistant to NSS)
- Data Entry Operators (20)

#### Training

- Mayang Sari, M.Sc. (Program Manager)
- Ir. Siti Halati (Senior Program Officer)
- Elviyanti Martini, M.Sc. (Senior Program Officer)
- Rika Juliarni, M.Sc. (Program Officer)
- Ir. Sugiatmi (Program Officer)
- Endang Dewayanti, M.Sc. (Program Officer)
- Tuti Rahmawati, S.P. (Assistant to NSS)
- Wiwin Damayanti, S.P. (Secretary to NSS)
- Robin Butar Butar, S.K.M. (Trainer)
- Dewi Widiastuti, S.P. (Trainer)



## **Credits**

### *Project Coordinators*

Regina Moench-Pfanner  
Lynnda Kiess

### *Editor*

Federico Graciano

### *Contributors*

HKI Indonesia staff

### *Production*

HKI/APRO Public Relations Team

### *Cover Photograph*

HKI Indonesia/Tom van der Weegen

© Helen Keller Worldwide 2000

*Reproduction of part or all of this document is encouraged, provided due acknowledgement is given to the publisher and the publication*

*This publication was made possible through support by the Office of Population, Health and Nutrition, USAID/Indonesia Mission, under the terms of Award No. 497-A-00-99-00033-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.*

